EXTENSION

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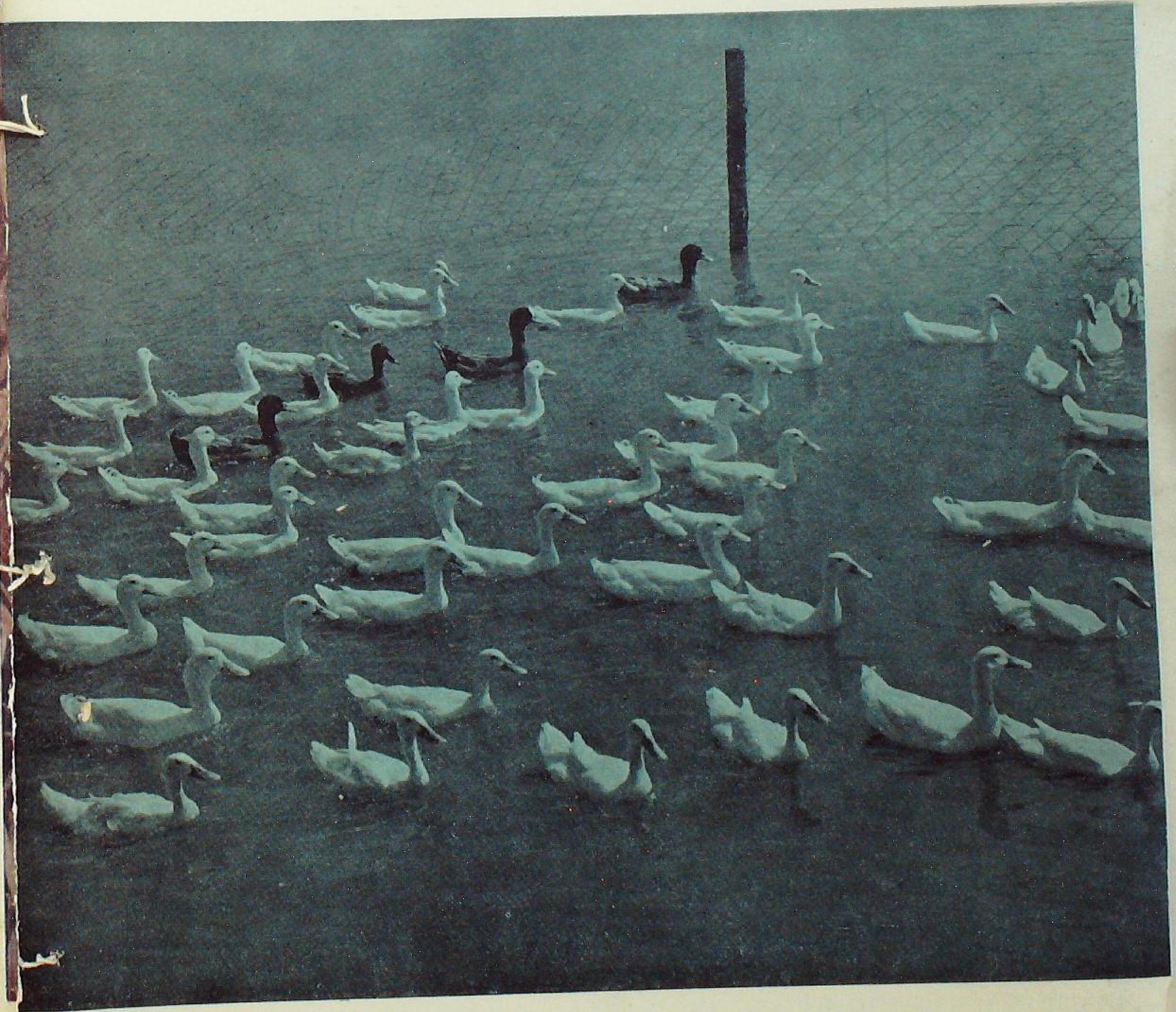
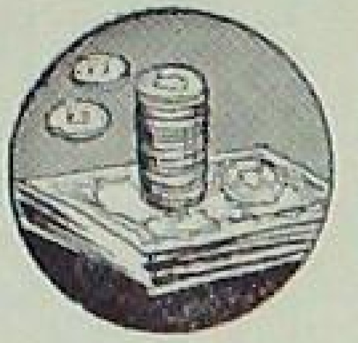
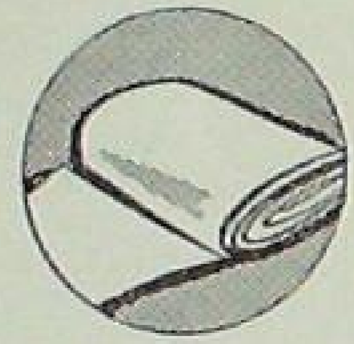


THE FARM AND FARM HOME MAGAZINE December 1961

WHAT THE PLAN MEANS TO YOU


Rise of Rs. 55 in per capita income

enough food for all


nearly 2 more yards of cloth

free and compulsory primary education

improved health services

14 million more jobs

pure drinking water for the villages

help implement the Plan through hard work, courage and enterprise for

A Good Life for Everyone

DA-61/348

THE PICTURE OF THE COVER *Ducks not only make a pretty picture when they are in water, but also give you palatable eggs if you provide them with clean drinking water. And by the way, you don't need a tank or lake to keep ducks!*

—Photo by R.K. Paul

EXTENSION

THE FARM AND FARM HOME MAGAZINE

Vol. II December, 1961 No. 6

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FARM INFORMATION UNIT
DIRECTORATE OF EXTENSION, MINISTRY OF FOOD AND AGRICULTURE, GOVT. OF INDIA, NEW DELHI

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Annual Subscription : Rs. 5.50
Single Copy : 50 nP.

YOU should certainly give sweet potato a chance. It is a food crop that deserves to be grown on a larger scale.

Next to the potato, sweet potato is our most important tuber crop, grown largely in Bihar, Uttar Pradesh, Madras, Orissa and Maharashtra. Farmers in other states too grow it, but to a smaller extent.

There are two things about sweet potato every farmer should keep in mind. It is no longer a poor man's food. You can now grow varieties with better table qualities, rich in food value and attractive in flesh colour. Secondly, you can grow sweet potato so easily.

WHAT SWEET POTATO NEEDS

It needs warm weather for four to five months. It can come up well as a summer crop on the hills up to an altitude of 5,000 to 6,000 feet, and in the northern plains. In the West, East and South, you can raise two crops a year.

Sweet potato does not like water stagnation or frost.

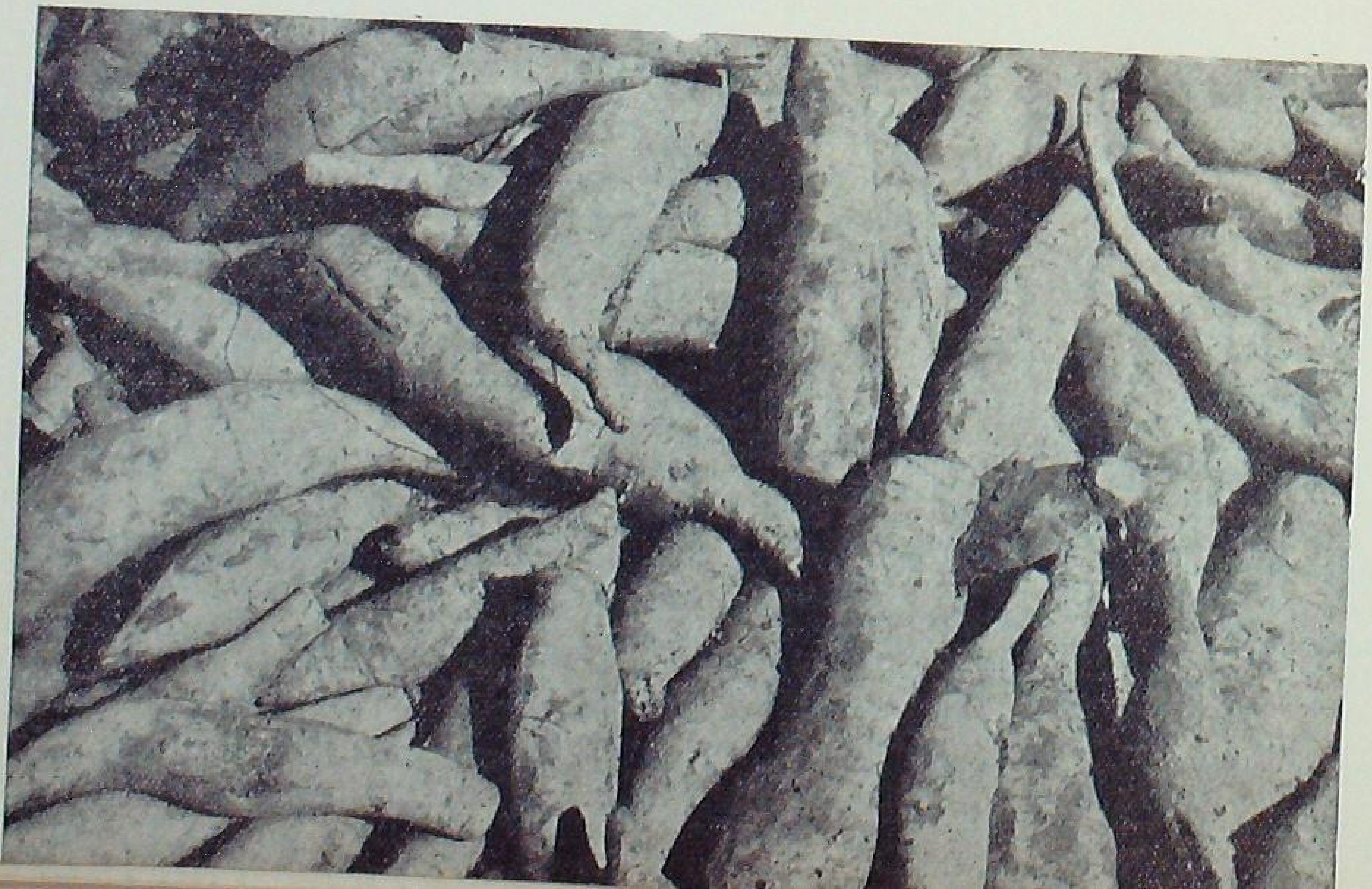
You can raise the crop on any soil, but you get the best results in sandy loam or loamy soils. Avoid deep sandy soils for sweet potatoes.

PLANTING SEASON

In the North, sweet potato is planted in June-July. Here, if you have planting material handy and water available, plant earlier in April or May. An early-planted crop always yields higher than a late-planted one.

GIVE SWEET POTATO A CHANCE!

By H.B. Singh



A bundle of cuttings ready for planting. The leaves are partially clipped

In the central region, plant in October-November. Where you can raise two crops, plant the *rabi* crop in November, and the *kharif* in May-June.

The monsoon crop in the South is planted in June-July. On the East Coast, planting is done in September-October.

In the eastern region, plant the main crop in September-October, and the second one in January-February.

In the northern hill areas, you can raise a good crop by planting in June.

In the Nilgiris, plant in April-May.

PREPARING THE LAND

Till the heavy soils well for sweet potato. If your soil is light, cultivate shallow.

Sweet potato grows well if given sufficient manures.

For increased yields, give the crop 250 pounds of ammonium sulphate (50 pounds of nitrogen) per acre in addition to the organic manures you apply.

After the land is prepared, lay out small flat beds, or ridges and furrows. The latter is good for monsoon planting.

Experiments show that flat planting is as good as ridge planting, regarding yield. However, ridge planting saves on water and makes harvesting by hand easy. But this means more money on labour.

The cuttings are planted with the two ends exposed

Sweet potato is a good feeder. Hence it is better that it is followed by a legume. Don't grow sweet potato on the same field for at least two years. This will keep down the sweet potato weevil, a bad pest of the crop.

PLANTING MATERIAL

It is not a good practice to use the vines of the previous crop or previous season's crop for planting. Using this type of material for planting always only results in low yields for all time to come.

The better practice is to produce good quality planting material from selected tubers in a nursery.

Buds on a sweet potato tuber sprout when conditions are moist and warm.

The budded tubers sprout and produce slips for further planting in the nursery

In the cooler North, plant the tubers in the nursery in spring. Since you would have harvested the crop in November, tubers may not stay well till spring. Hence, leave a portion of the crop in the field itself till you need tubers for bedding in the nursery.

In other parts of India, where you grow two crops, select tubers from the winter crop and bed them. The summer-planted crop will give you material for winter planting.

Prepare the nursery bed well. Give it enough manure. Plant the tubers 2 to 3 inches deep in moist soil in rows 1½ feet apart. You will need 80 pounds of medium-sized tubers (about 400 tubers) for bedding in a 400-square-foot area. Use the sprouts (or slips) from these for planting more of the nursery area. Plant these slips a foot apart in rows two feet apart. This way, you can gradually increase the nursery area to eight times the area you started with. For planting an acre, you need 1/15th of an acre of the nursery.

After the tubers have sprouted, irrigate once eight or ten days. Apply 150 to 200 pounds of ammonium sulphate per acre of the nursery in two doses, timing the same on the growth of the vines.

PLANTING

Give a spacing of one foot between plants and two feet between rows. This spacing allows you to do interculture easily.

You will also get more of good-sized tubers from the crop. To follow this spacing, you need 20,000 cuttings an acre. See that each cutting has four nodes.

If the variety you plant is of a bushy habit, you will need less spacing between rows. You can keep this at 1½ feet.

For planting, don't use the full length of the vine. Better reject the lowermost 1 to 1½ feet of the vine. Again, cuttings from the top portion of the vine are better than those from the middle or lower portions.

After planting, press down the soil round the cuttings. Give an irrigation immediately after. In hot weather planting, give two irrigations for the cuttings to root quickly. In the monsoon areas, better plant with the drizzle. For good rooting, the soil has to remain moist four or five days after planting.

IRRIGATION

Irrigate sweet potato where there is a break in the monsoon. One irrigation in three weeks is enough. Also, give one or two irrigations after the monsoon has stopped.

The long vines are made into cuttings, each having four to six nodes depending on the variety

In *rabi* areas, give irrigations fortnightly.

See that water does not stagnate in the sweet potato field.

INTERCULTURE

In the early stages, weeds come up. Weed the field, and as you weed, slightly earth up the growing vines.

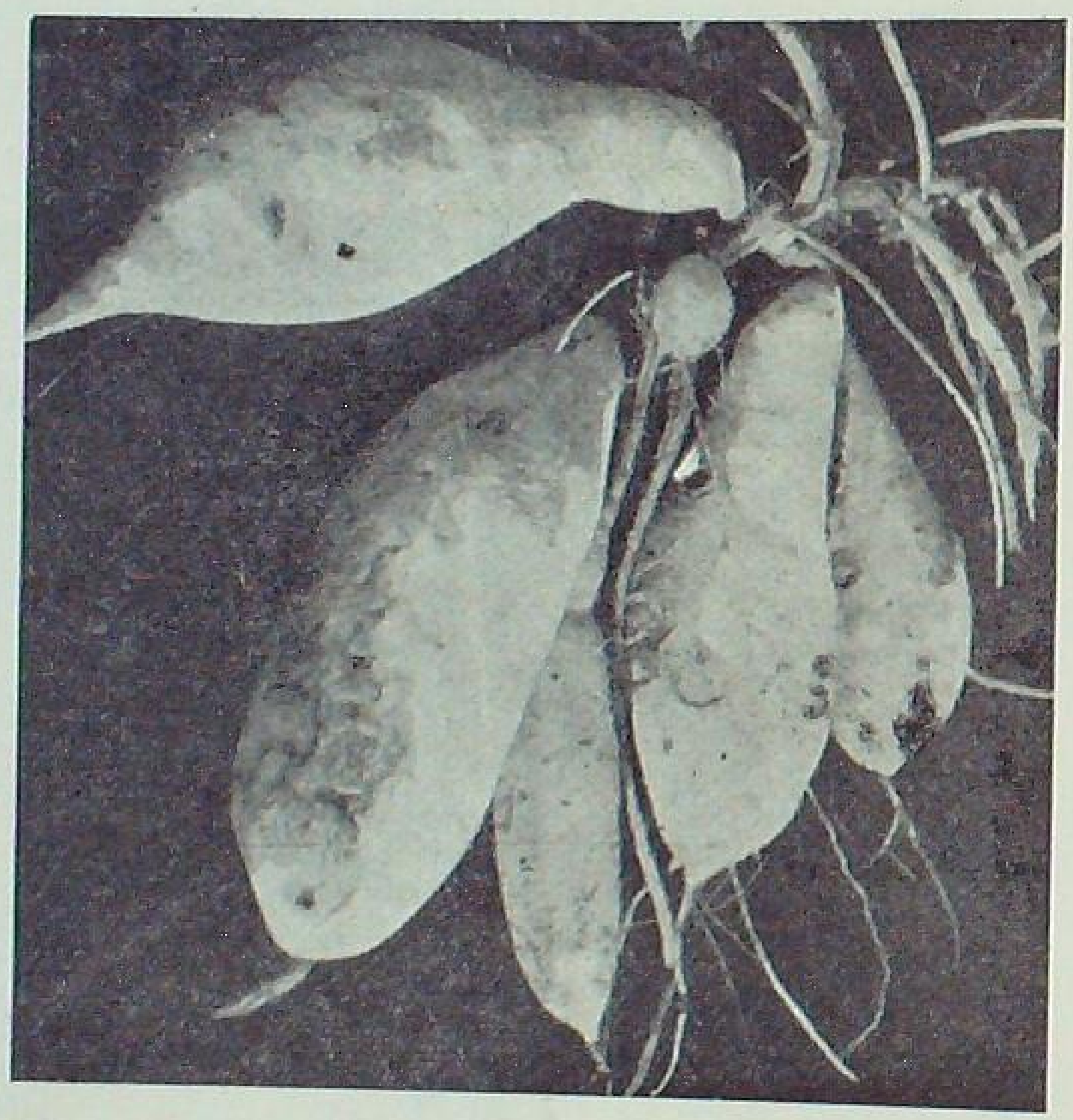
Disturb the vines once or twice during their growing period. This helps the vines produce uniformly good-sized tubers.

HARVESTING

Harvest only when tubers are full and ripe. You can make this out by the yellowing of leaves, or by cutting a few tubers. If ripe, the cut surface will dry clear. If unripe, it will dry to a dark or greenish colour.

If you want to market the tubers soon after harvest, remove the vines a week earlier to harvesting. This makes the tubers sweeter.

If vines have been damaged by frost, remove them early and harvest the tubers later, when convenient.



A bunch of tubers of Pusa Suffaid—*a widely adapted variety*

Dig out tubers carefully. Use a long-pronged fork, if possible, for lifting them.

At harvesting time, separate out tubers which are well-formed in groups close to the base of the stem for your nursery. See that they are not bruised and are free from weevil attack. Spread these out in a cool, well-ventilated room till required for planting.

Remember, however, that tubers stored too long do not sprout well in the nursery. As such, it is a good practice to leave a part of the crop unharvested, and dig out the tubers 8 to 10 days before they are needed for planting.

CURING

To make the tubers store well for some time at least, cure them.

In the cooler North, spread the tubers in the sun during the day, and take them indoors at night (or cover them well with a tarpaulin). Carry out this sun-drying for about a week.

Experiments in Madras show that tubers, if stored in a pit and completely covered with straw, keep well for two or three months.

PESTS AND DISEASES

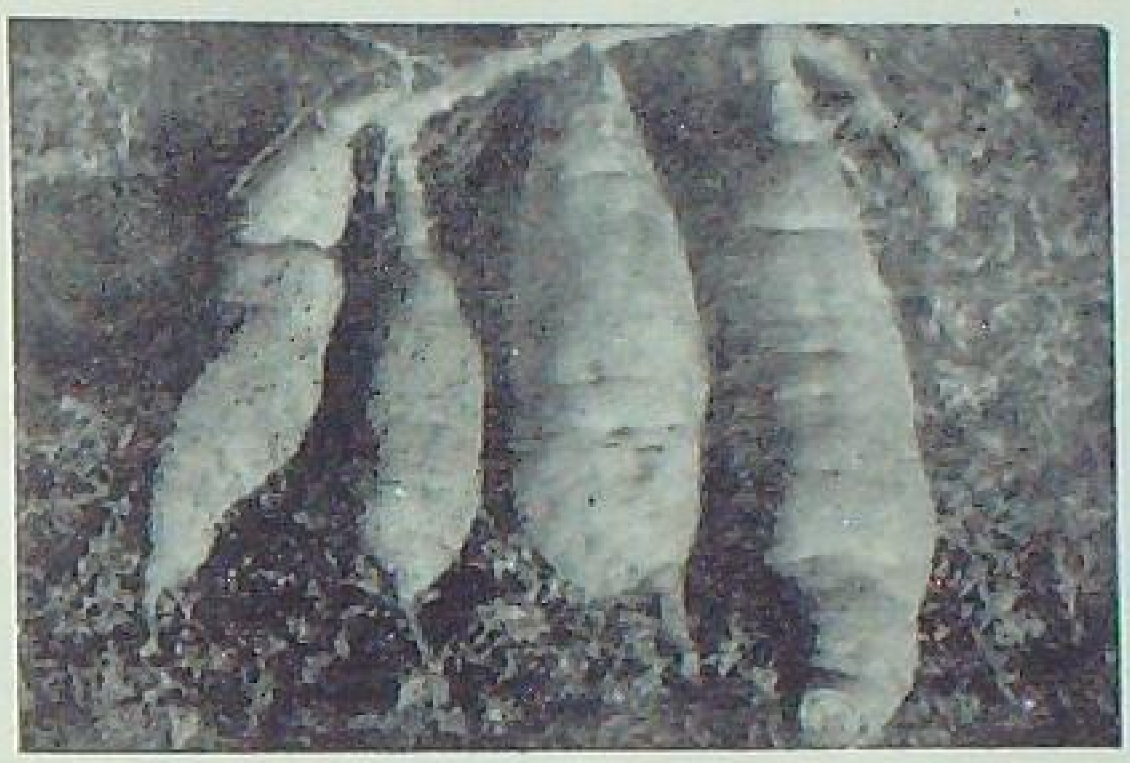
A leaf-eating caterpillar and a weevil are the two common pests of sweet potato. The weevil does the greatest damage. This pest is carried by the vine or the tuber, and thus passed on from one season to another. Examine the vines and tubers carefully at harvest, and destroy all infected material.

You can dust the tubers with two per cent DDT before planting in the nursery. Also dust the furrows before planting the tubers in them. Similarly, dust the nursery with the DDT twice or thrice.

The caterpillar can easily be hand-picked and killed. You can also dust the crop with five per cent B.H.C. dust.

VARIETIES

Some very good table sweet potato varieties are now available for you to try.



Some of the high-yielding varieties which are doing well in various states

Some of these also yield very high.

Among the white-skinned and white-fleshed varieties are:

Pusa Suffaid (has come up well in the Punjab, Uttar Pradesh, Rajasthan, Andhra Pradesh, Madras, Kerala and Mysore),

Til Shin Tun (doing well in parts of the West Coast and Orissa, and suitable for north India too),

F.B. 4004 (good for Maharashtra, Orissa, Punjab, Madras, Kerala and Andhra Pradesh), and

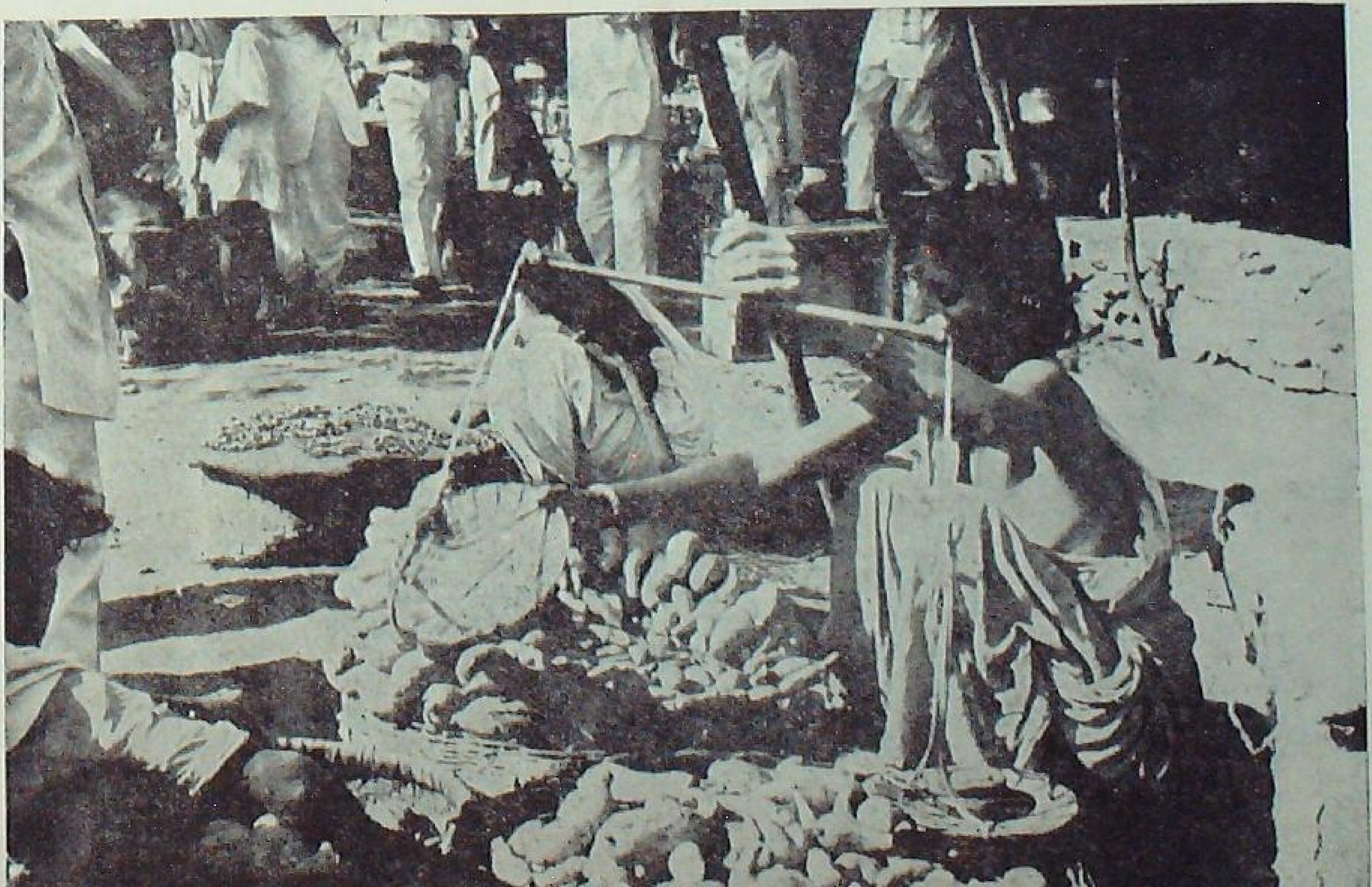
Hosur Red and *Hosur Green* (for Mysore).

Among the red-skinned and white-fleshed varieties are:

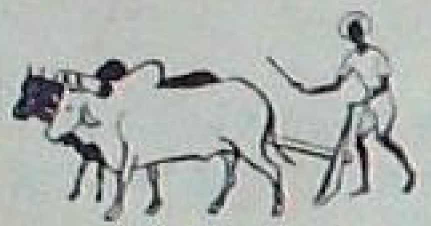
Pusa lal (doing well in the plains and hills of north India) and *F.A. 17 Red* (found suitable in all areas).

For those who like yellow-skinned and yellow or orange-fleshed varieties, there is *Pusa Sunerhi*. This can be grown on the plains or hills of north India.

Among the purple-skinned and yellow or orange-fleshed varieties are the *Ranger* (good for Bihar), *B. 5951* (Bihar again) and *B. 4306*.



LEAFLETS
FOR PROGRESSIVE FARMERS

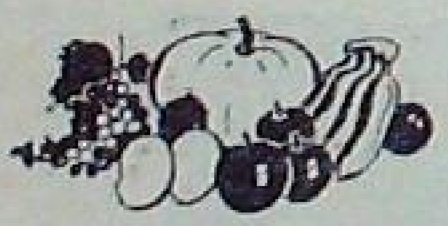


FARMING

Treating seed before sowing
Protect your soil
Better implements for a better rice crop
How to treat paddy seed
Better level and bund your field
Raise a better barley crop
Getting good gram yields
The way to higher wheat yields
Late blight of potatoes
How to make silage
Choose your irrigation method
Better grow berseem
How to make paddy straw a better cattle feed
Grow maize the improved way
Five fodder grasses that your can grow

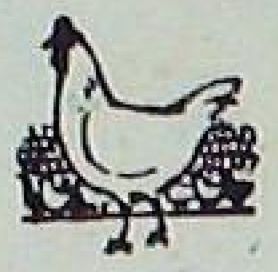
MANURES AND FERTILIZERS

Compost is easy to prepare
Green manuring
How to use fertilizers
Facts about fertilizers
Water hyacinth gives a good compost
Giant Hemp is a good green manure crop



HORTICULTURE

Papaya is easy to grow
Drumstick, the year-round vegetable
Growing grapes in South India
Rabi vegetables—grow them this way
How to grow paying pineapples



POULTRY

How to fight coccidiosis in poultry
Protect your poultry birds against Ranikhet
Save your fowls from tick fever
Fighting fowl pox in poultry
How do you transport your poultry birds ?
Watch out for pullorum
Culling poultry for profit
How to make a brooder for your chicks
How to start a poultry farm
How to control lice on poultry
Tapeworms in poultry
Your chickens and infectious coryza
The egg and you
Making eggs keep fresh
How to pack eggs for transport
Selecting poultry birds for breeding
Selecting birds for poultry show
Moulting in poultry
Poultry keeping for egg production
Feeding poultry for profit
Do your hens pay ?

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Controlling paddy pests and diseases
The rice bug
Get rid of white ants

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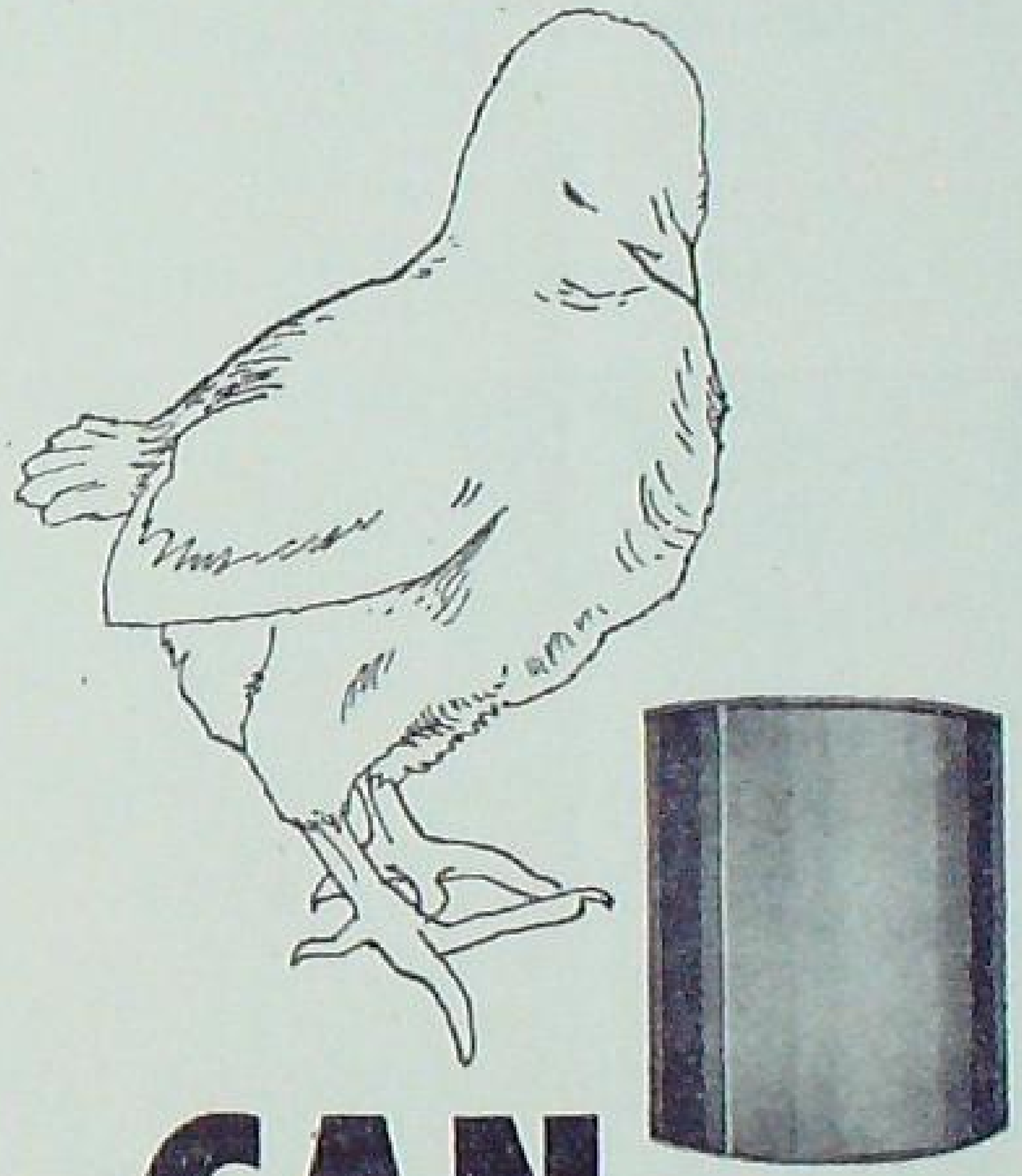


YOU CAN CAN CHICKEN TOO

LIKE vegetables and fruits, chicken too can be canned.

When you cook the meat under pressure in steam in closed containers, its flavour stays.

You do not need special storage for canned chicken meat. When stored in an ordinary room, the canned meat will easily last for five years.

You can organise canning of chicken on a small or large scale.

Removing the feathers →

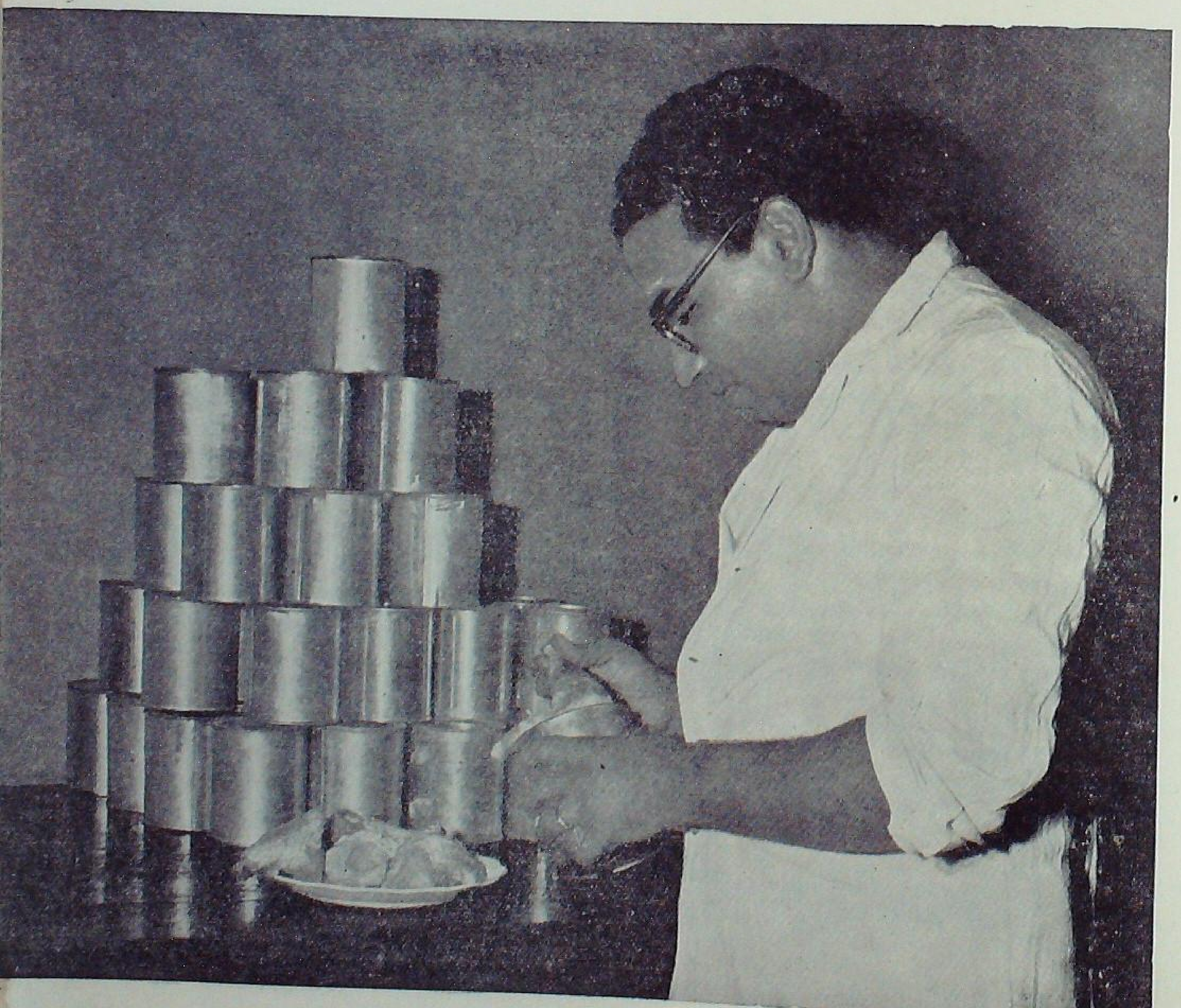
This is how you can chicken :

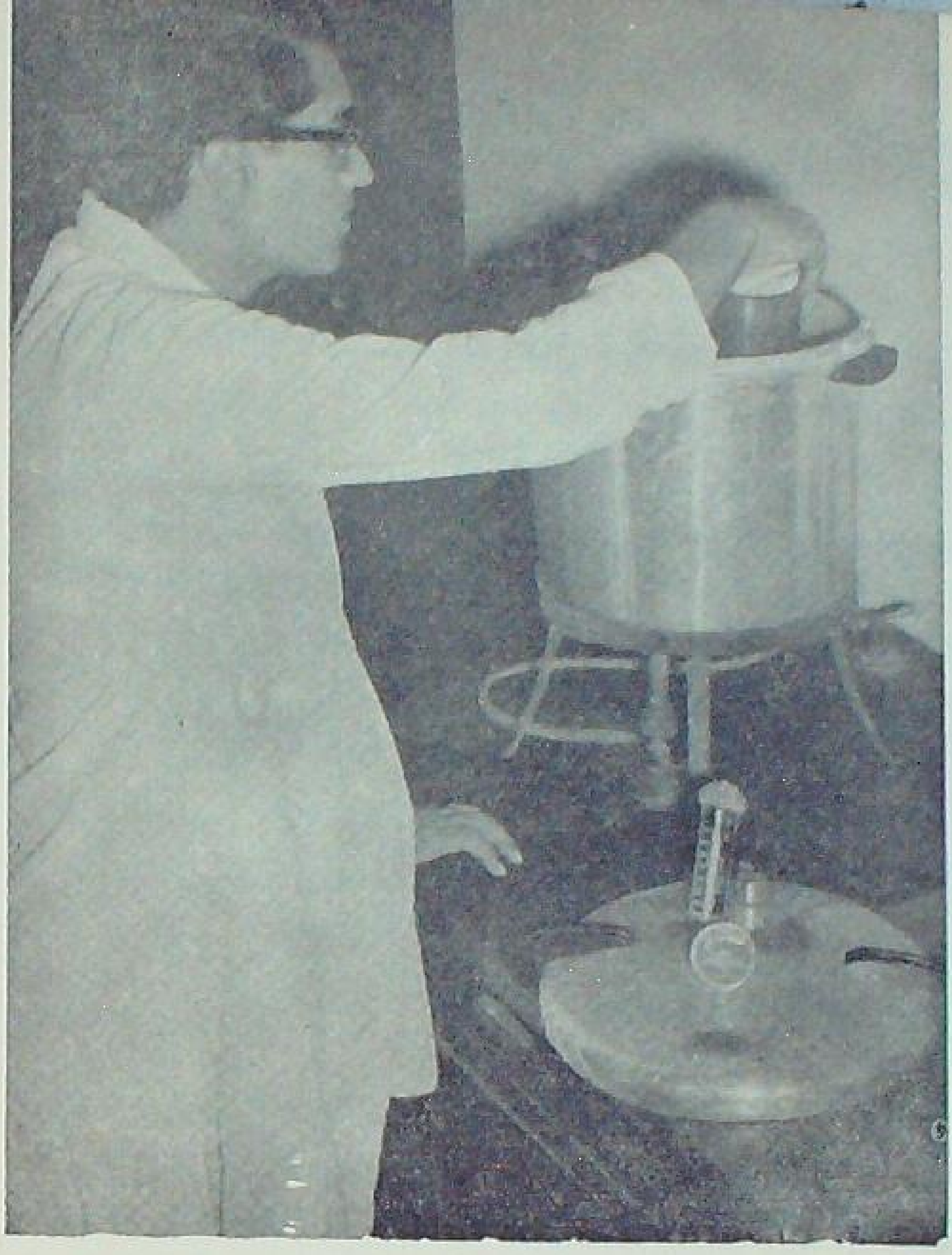
Starve the birds for a night, giving them only water to drink. Kill them the next morning by dislocating their neck. Pluck and hang them up in a cold room for tendering of the meat overnight. Singe the carcass next, cut off the head and remove the blood. Also, cut off the shanks and feet, the third joint of the wings, the oil-sac and the neck. Now draw the carcass, i.e., remove the intestines, lungs, heart, liver and the other internal organs.

You can can chicken meat in various ways : whole chicken, cut-up chicken and meat only or boned chicken. Commercially, cut-up chicken is the most useful and popular pack.

Pack the meat tightly into the tin can. Add jellying material such as a one to two per cent solution of agar to fill up the empty space between the inner surface of the can

Packing the chicken meat into the tin cans





and the meat. Don't add salt before cooking, as it may blacken the lacquer of the can inside. Cook under pressure, say, for about an hour.

Soon after processing, remove the can from the cooker, and cool immediately by dipping it into cold running water, so that no further cooking is done.

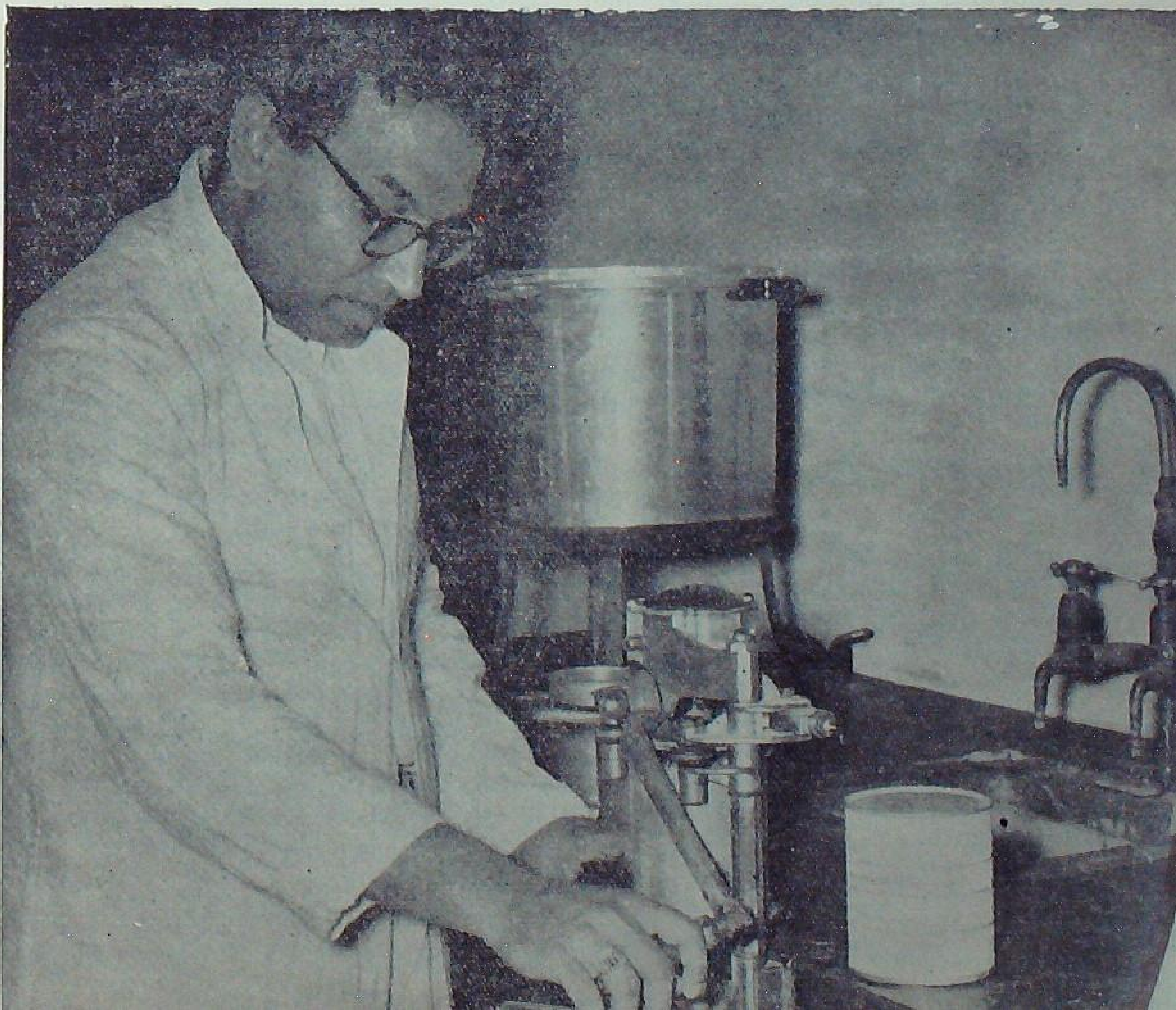
Remove the can from the cold bath when still somewhat warm, and wipe dry.

Label and store in a cool dry place.

—S. G. I.

Sterilizing the filled cans...

...and finally sealing them



BETTER FARMING TIPS

A SOLUTION TO STRIGA PROBLEM

RAJASTHAN farmers are being asked to use 2, 4-D to fight striga, the bad weed found in *bajra*, sugarcane and *jowar* fields.

Striga, known to the farmers as *roon khari*, *bichun* or *agia* is found in recent years to badly affect these crops.

Experiments on controlling striga in the State showed that spraying with 2, 4-D (at two pounds dissolved in 100 gallons of water per acre) one month after sowing the crops, followed by one more spraying (at 1-1/4 pounds of the chemical in 100 gallons of water per acre) can kill the weed.

Two sprayings after the weed has appeared has also been found to be effective. Farmers should also remember that it is very important to destroy the weed plants before they start flowering.

Instead of spraying, farmers can also dust their crop with 2, 4-D at three pounds per acre mixed with 22 pounds of cowdung ash ; the spraying or dusting has to be repeated after a fortnight.

To completely get rid of the weed, however, farmers will have to continue the sprayings or dusting for a few years. It is also necessary that all farmers in the community join in this programme.

A BETTER BARELY FOR RAJASTHAN

R.S. 17, a new and better barley evolved by the Rajasthan Department of Agriculture satisfies the need for a barley suitable for Rajasthan conditions.

Rajasthan farmers have been wanting a high-yielding variety that can be grown with success in conditions where moisture is insufficient, and which can also resist the smut disease.

The new variety satisfies all these conditions.

R.S. 17 has bold grains. It is early maturing. In the trials at the research station at Basi in the State, the variety gave an increase of three maunds of grain over the local and one maund over *N P. 21*, the improved variety so far grown by farmers.

The variety also responds well to fertilizers.

KEEPING SUGARCANE FREE FROM WEEDS

HOW do you solve the weed problem in the sugarcane field ? Hoeing ? Using weedicides like 2, 4-D ?

Experiments at the Indian Agricultural Research Institute, New Delhi, now prove that best results are obtained if you combine both the methods.

At the Institute, the effect of cultural methods (hoeings) and chemical methods (spraying 2, 4-D) singly and in combination on the yield and quality of cane was studied.

2, 4-D was applied to the field at two pounds (acid equivalent) per acre once before weeds appeared and once after weeds had come up. Three hoeings were also given with a cultivator.

The first spray with 2, 4-D was given 10 to 12 days after sugarcane was sown, and the second with the onset of the monsoon in July. Three hoeings, at intervals of 20 days, were given with a cultivator in-between the two sprayings, and after an irrigation.

This treatment gave the best weed control, and increased the yield of cane by 51 per cent.

When To Pick *Bhindi*

by Biren Barthakur and S. Barooah

BHINDI (okra or lady's finger) is popular with the people in Assam as it is elsewhere. With the coming of the monsoon and throughout summer, *bhindi* is available in the Assam markets.

Once, people here liked long round pods of dark green colour and a smooth surface. But most varieties available are too long, hairy, and not suitable for packing in bamboo baskets or gunny bags, as the pods break in such containers during transit.

Now, traders prefer tender, smooth stocky, short-podded varieties, with dark green colour. These stand transport well. Such pods have high food value : two per cent proteins, seven per cent carbohydrates and one per cent minerals, and also a high percentage of vitamin C.

Bhindi pods, when young, are tender. But soon they develop fibre. Pods which are fibrous fetch poor price in the markets. Hence, the grower and the trader should know at which stage they should pick *bhindi*.

To find out the answer, we made an extensive study at the Assam Agricultural College at Jorhat. Our observations show :

**Bhindi* pods began forming fibre on the sixth day of fruit formation. With the naked eye, you can see it only on the eighth day.

*Fibre suddenly increased over the ninth day; on the tenth day the pod is completely fibrous.

*The best time to pick *bhindi* is from the fourth to the sixth day of fruit formation.

*Harvesting the fruits on the third and fourth days resulted in a longer fruiting period ; when lower pods were allowed to mature, the plants either stopped fruiting, or formed only a few fruits.

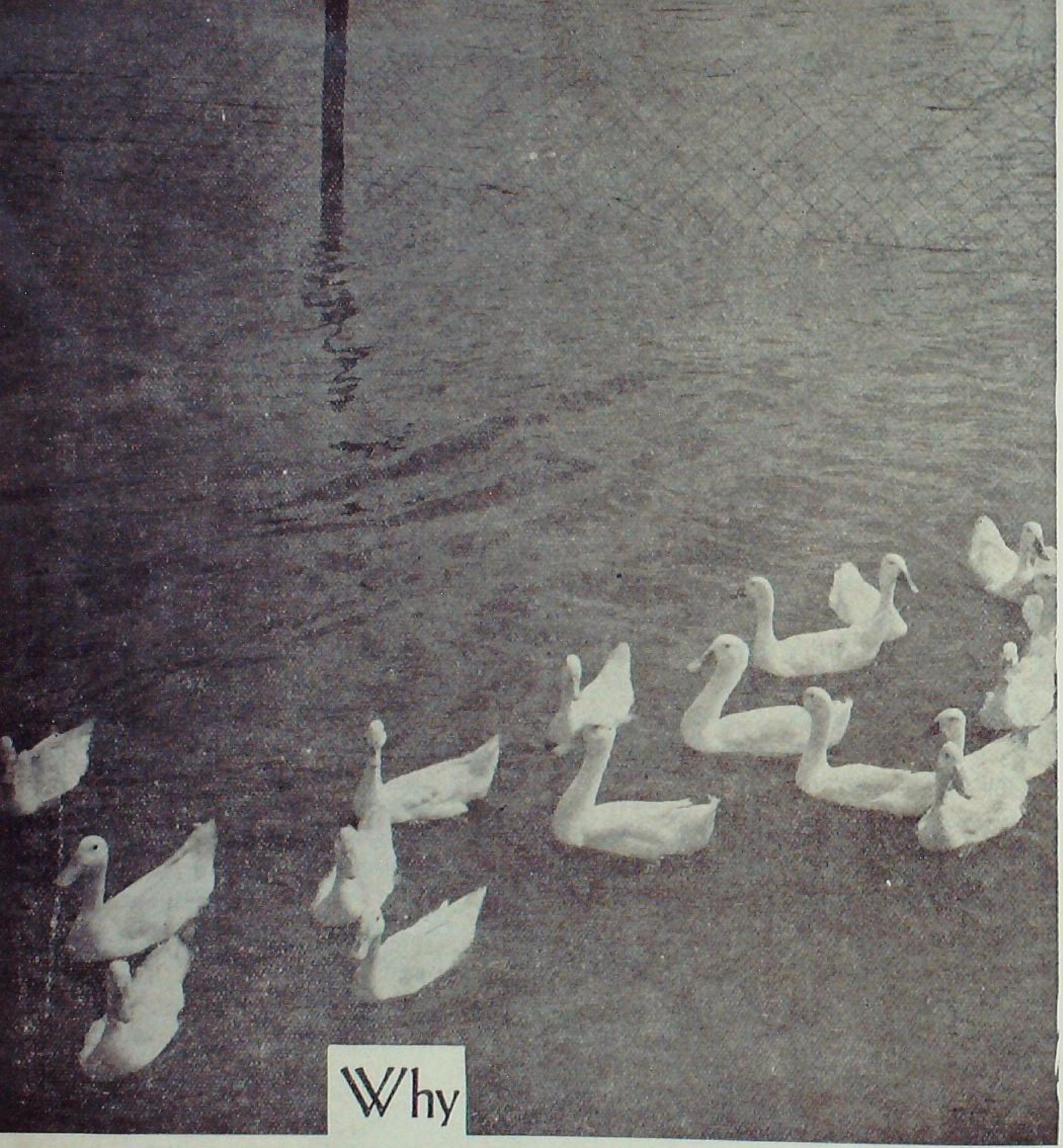
All this showed that :

If *bhindi* pods are picked from the fourth to the sixth day of the formation of fruit, the pods will be at the most suitable stage for consumption.

Such pods stand transport well, as they are neither brittle nor too long; they can also stand longer refrigeration.

The pods will have high food value.

Growers will earn more profits, as they will get a better yield of pods from the plant.



Why You Should Keep Ducks, and How

By S.G. Iyer

WHY should you keep ducks ? For this simple reason: what you spend on them when you start with, you will get back three or four-fold within a year by selling the birds and eggs.

Also, a duck lays 30 to 40 more eggs a year than the hen. Duck eggs are heavier than hen eggs, and a duck lays fairly well in its second and third year of life, unlike the hen.

Duck eggs will be tasty and wholesome, if you keep the birds away from sewage and provide them with clean water to drink.

Ducks come up well on any soil, provided they can have the water they need. Ducks prefer wet, muddy conditions. Wherever you have ponds, tanks, river banks and deep paddy and jute fields, you can keep ducks.

Running water is best for ducks. But any pond or tank which will not go dry in summer will do. If you do not have these, you can still raise ducks if you provide water in a large-mouthed trough of galvanised iron or in open earthen pots. Only, provide fresh water, and change it often.

Many growers raise ducks for the city markets. But they do not follow good breeding and rearing practices. As a result, the birds they raise are small ones.

BREEDS

The common Indian breeds of ducks, people keep, are the *Indian Runner, White Bearded*, *Nageswari* and *Sylhet Mete*.

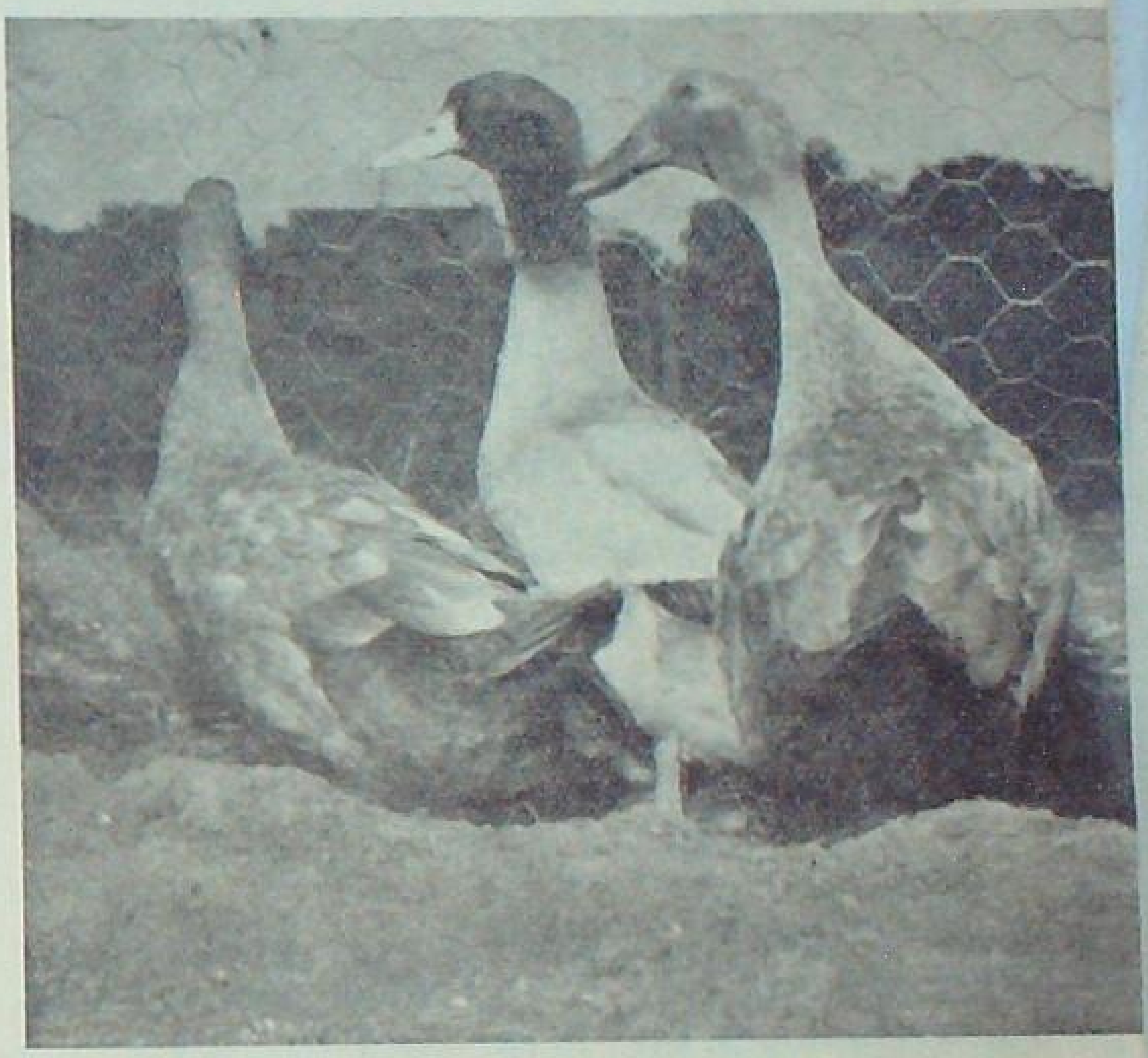
Among the imported improved breeds of ducks, the most popular are *Aylesbury* (English), *Pekin* (Chinese), *Rouen* (English) *Cayuga* (American), *Muscovy* (South American), *Orpington* (English) and *Campbell.*

Of these, *Campbell* (white, dark and khaki) is the most popular, and thrives well in India, both under wet and dry conditions.

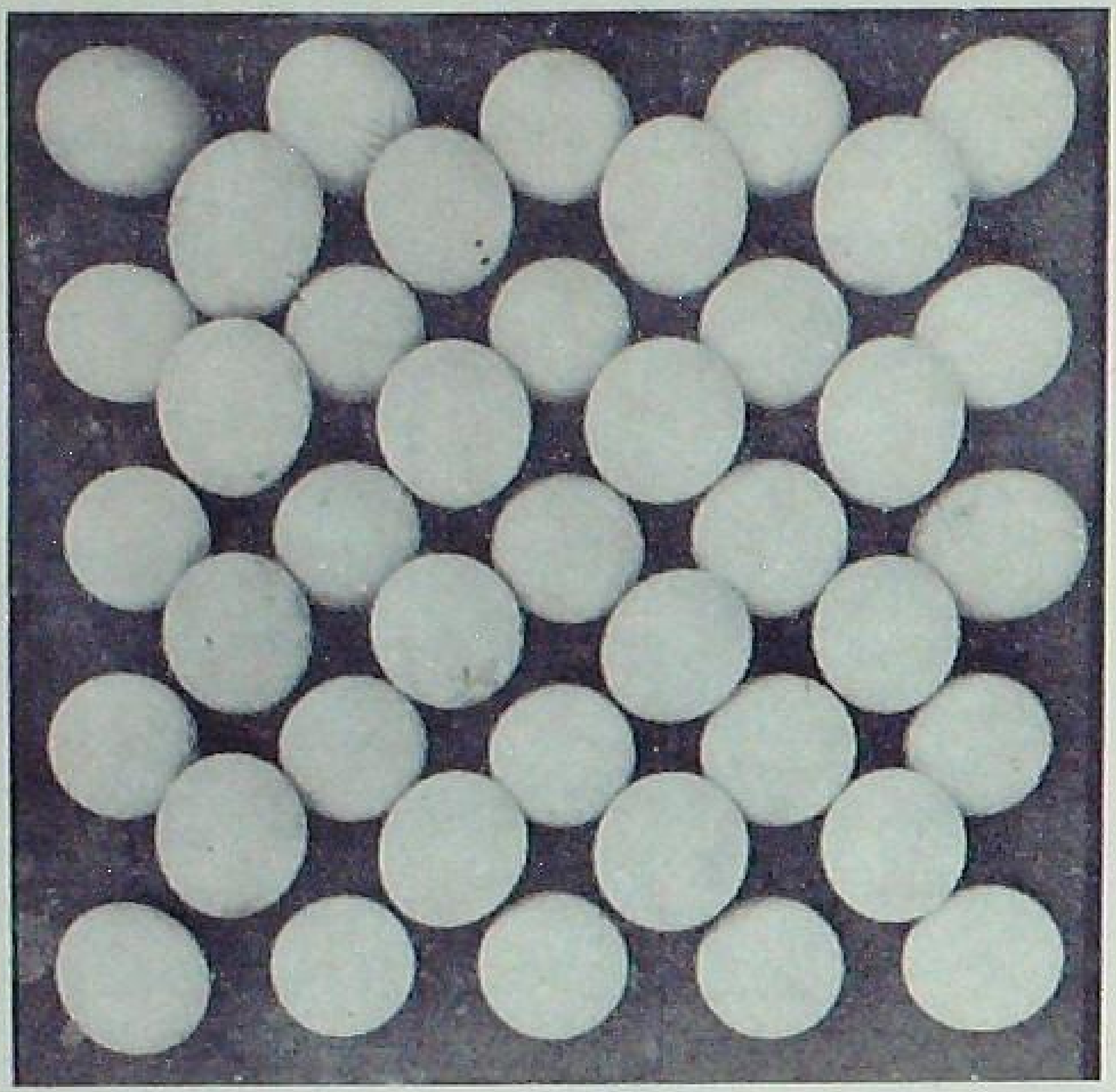
The *Indian Runner* is a good layer, but not a good table bird. It is hardy and easy to rear.

BREEDING

If you want to maintain good layers of pure bred ducks, then buy your birds of good quality from reliable people. See that the birds you buy have the right shape, size and colour of the breed.



Both Cambhells (above) *and* Indian Runners (below) *are good layers*



The number of hatching eggs you get will depend on the way you manage your birds

A good laying duck is of medium size, fine in bone, has a thin neck, wide across the shoulders, and is full-breasted, deep from the back to the breast and tight of plumage. Avoid birds which have little flesh on the breast bones or those which are weak on the legs.

Ducks normally lay when they are five to six months old. But use them for breeding only after they are at least ten months. Ducks in the second year of laying make better breeders.

Keep a record of egg production of the whole flock rather than of individual birds. Under our conditions, a duck should produce at least 200 eggs in a year.

Don't use a drake which is a near relative, such as a brother or a father for breeding. Also, change the drakes every two or three years.

Mate the ducks six to eight weeks before saving the eggs for hatching. Provide breeding ducks with grass lawns or range; do not shut the ducks always inside their houses.

Put one drake for every four to five ducks in the breeding pen. This way, you will get more of fertile eggs.

You can make out the drake from the ducks by the curly feather in his tail. He has also a thin and low voice as against the loud and full quack of the duck.

Be careful how you handle the birds. Ducks need to be handled gently. Do not frighten them or drive them about. When you want to catch a duck, drive it gently into its house and catch it there.

Select only the best birds for breeding. Even if you have a good flock, you may have to cull out, because of one defect or the other, about 25 per cent of the birds every year.

INCUBATION

Ducks start laying during rains. They lay their eggs at night and through the morning till about 9 or 10 a.m. They may drop their eggs on the run or in water.

Better provide in the nests clean, dry hay or straw. Also cover the run with wire-netting to prevent crows from carrying away the eggs from the duck house. Let the ducks out of the house after nine or ten in the morning.

Don't use eggs, more than six days old, for incubation. Before incubating, candle them and discard all cracked or defective eggs. If there are more than eight or ten eggs to be hatched, use the incubator. If the number is small, then you can hatch them under a broody hen.

NATURAL HATCHING

Hens make the best hatchers and mothers for ducklings. The *Chittagong* hens make the best mothers for ducklings.

Place only six to eight eggs, even under a large hen.

For setting the eggs, get an earthen vessel 15 inches in diameter and 9 inches deep. Put about 5 inches of clean, fine and dry earth in the vessel and press it well. Make a hole at the centre. Place an inch of dry cowdung ash over the earth and press, so that a saucer-like shape is formed. Sprinkle a handful of sulphur powder or DDT or BHC powder over the ash. Over this layer, place a layer of soft hay. Keep the eggs in the nest, if possible, late in the evening and put the broody hen over the eggs.

Place some grain and water a few feet from the nest for the hen to feed on whenever she wants.

On the 27th day, the eggs will chip. Remove the shell above the crack so that the duckling inside may easily breathe. Normally all ducklings will be out on the 28th day except in the case of the *Muscovy* duck, which takes 33 daysto hatch

You can use any incubator for hatching duck eggs, but you will have to provide extra moisture. The humidity should be about 60 per cent, raised to 70 per cent during the third and fourth weeks. During the last four days of incubation, if you sprinkle some warm water on the eggs, it will help in easy hatching. The incubation is the same as for hen eggs.

Ducklings do not need heat for as long as chicks do. In the case of artificial rearing, start the brooder from foster mother at 90°F, reduce it to 80°F at the end of the first week and to 70° F at the end of the second week. The ducklings do not need artificial heat after the third week, excepting in the cold weather when a temperature of 60° F in the third week will be found sufficient.

Allow the ducklings from natural hatches to remain with the hen for the first one or two weeks.

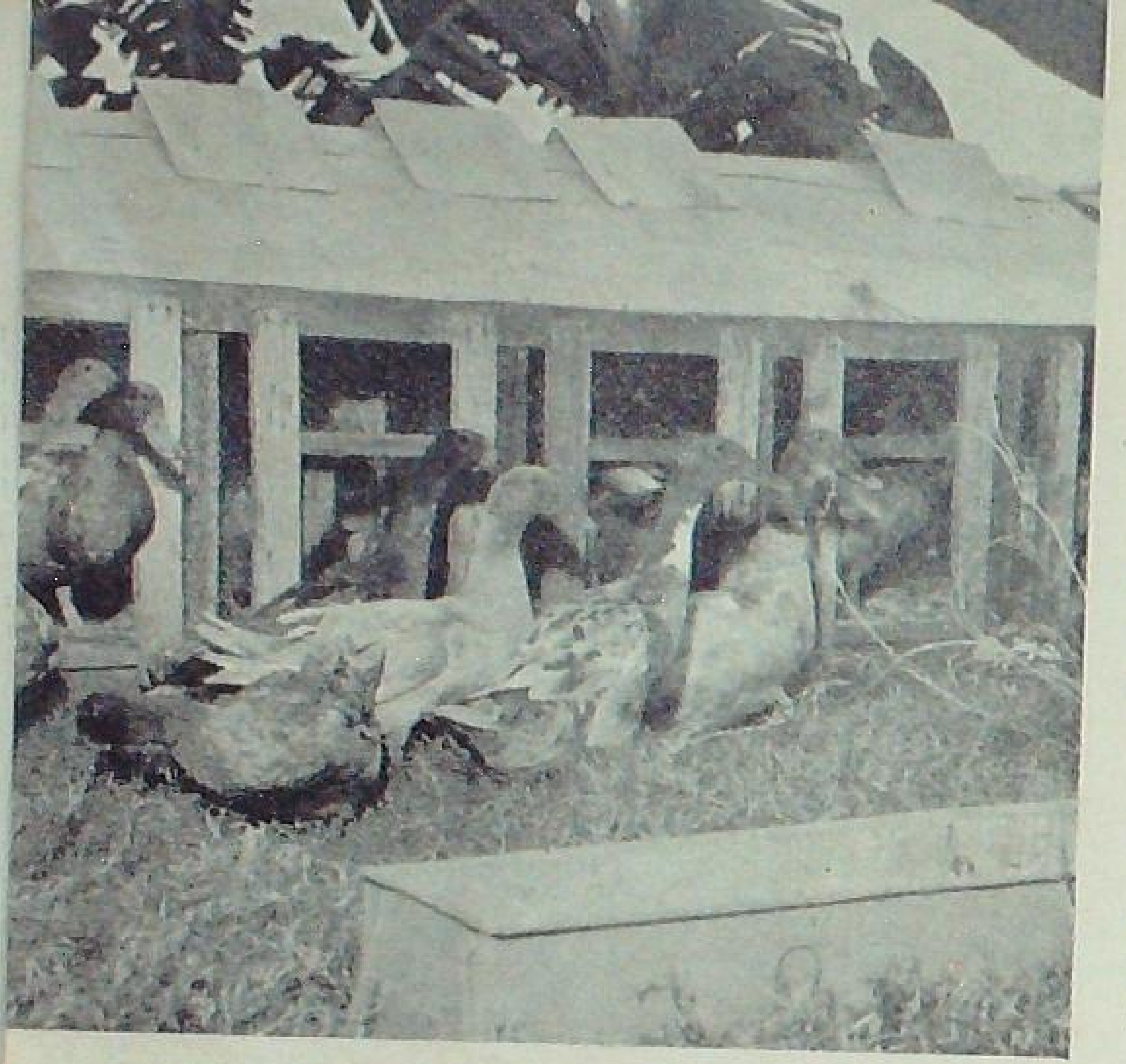
Start feeding the ducklings 24 hours after they have hatched

Ducklings are quite safe after about five weeks when they are ready to go into houses and grass runs; but they need not have swimming water till they are six to eight weeks old.

Ducklings being stupid creatures, they have to be taught to eat. Dip a clean feather into a mixture of feed and hold the feather at the mouth of the duckling. It will peck at it and soon learn to eat. Also, place clean water in a small, shallow vessel, half to one inch deep, near the ducklings. They will drink the water and pick up the mash from under the water.

HOUSING

Build the duck house with a run on the bank of a tank or any water place. Have the floor cemented. You can use any type of roof for the house. Let the house face south. The door should be wide, with a wooden frame and covered with half an inch wire mesh. See that it is protected



Provide the ducks with a house to protect them from enemies

Better construct the house with brick and cement or wood or thatch. See that the house has proper ventilation.

A house 12 feet long, 8 feet wide and 6 feet high can have 24 adult ducks. Don't overcrowd. Don't keep chickens along with the ducks in the same house.

Wash the house at least once a week. Change the straw or hay used as litter in the house once every ten days. Disinfect the floor. Duck manure is rich in nitrogen. Hence, put it in the compost pit.

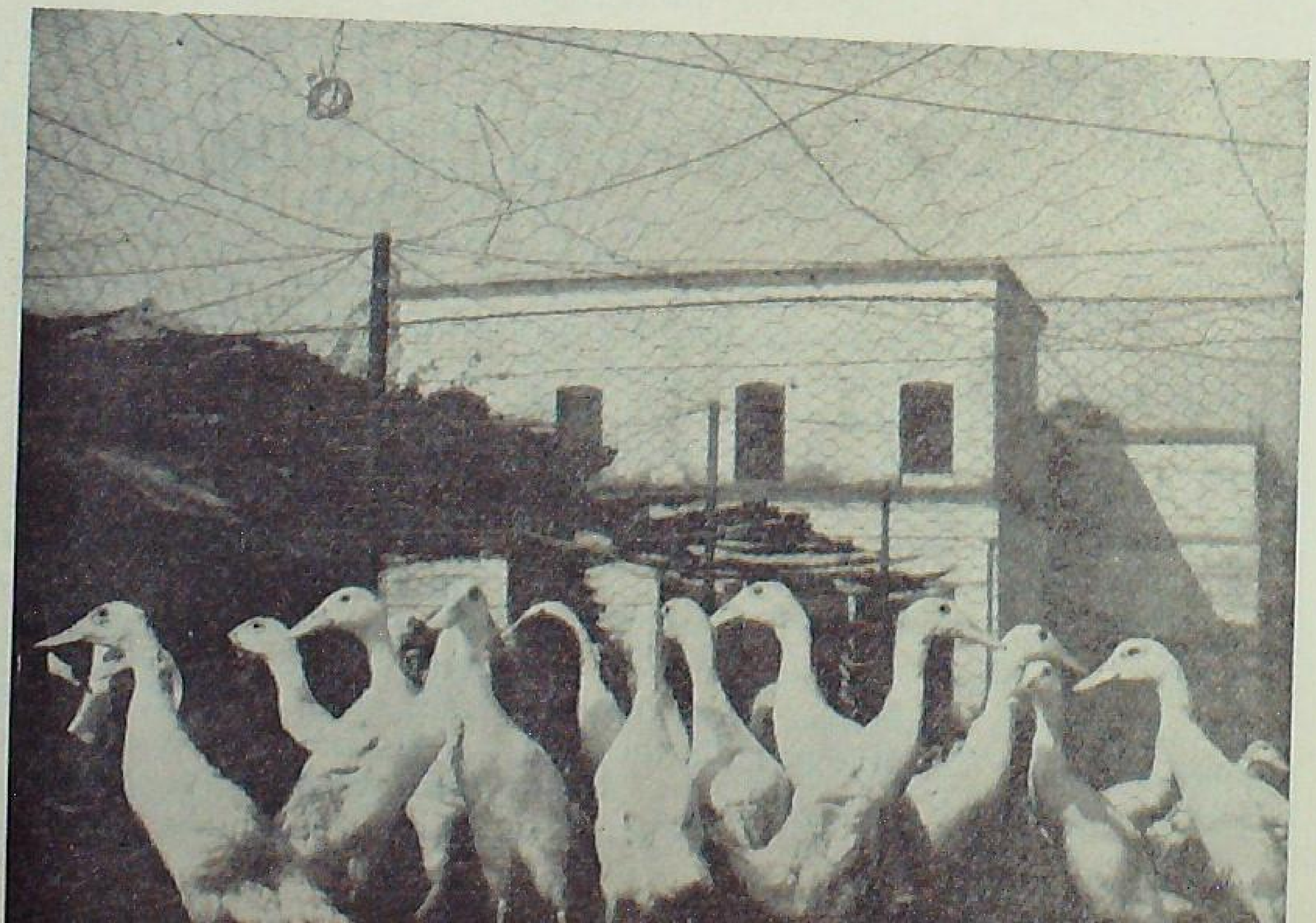
A duck house is more for protecting the birds from enemies at night. In fact, if your area is free of dogs or jackals, ducks can very well sleep out at night.

from draft from the east, north and west, Keep an open space of a foot deep all round between the roof and the wall. Cover it by one-inch mesh wire netting. Ducks do not need perches in the house.

RUN OR YARD

Enclose the run with a two-inch mesh wire netting to a height of six feet. Cover the top also with wiring. Have the floor of the house and the run so sloped that water does not stagnate.

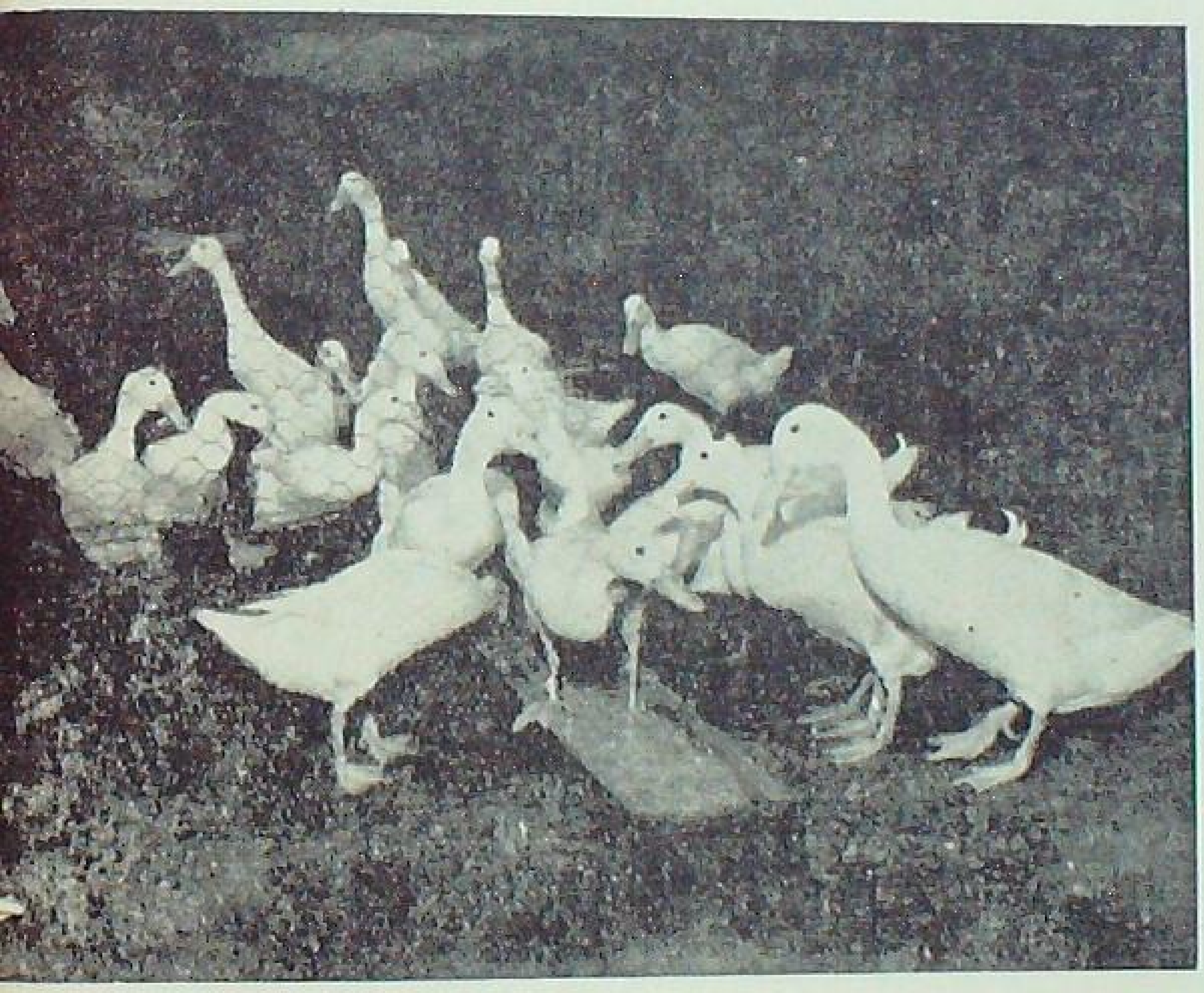
Have a run, but see that it is covered with a wire netting



Allow the ducks to come into the run in the morning where they can feed and remain till about ten. Then allow them to go to the water for swimming.

SHADE

Ducks need no protection from rain. However, they cannot stand the sun during noon. Hence, plant some fruit trees such as graft mango, citrus or jack for shade in the yard. If this is not possible, provide a shade in the run. Dig up the run once every six months.



Make the feed available to the birds all the time as they grow up

FEEDING

Twenty-four hours after the ducklings have hatched, you have to keep them in a dry place and feed them. For the first week, give them cooked rice and oat-meal. From the second week onwards and up to six weeks, feed them on ground grains, such as oats, barley and rice with finely-chopped meat and separated milk or warm water, all cooked together. If the tank or pond has snails, collect, wash and break them open, and after boiling, feed them to the birds.

After the sixth week, give the ducklings cooked vegetables and grit, in addition. The feed should be sloppy. Keep this in front of the birds all the time.

See that clean drinking water is available to the brids always.

Ducks eat more and more as they grow up. An adult duck will need seven to eight ounces of feed a day. Similarly, they need more run space.

Green food is necessary for ducklings. All vegetable wastes, cabbages and onions may be chopped up and cooked and fed separately or mixed with the feed. Tender *doob* grass is as good as vegetables.

If there is no water for swimming, provide at least drinking water in a big wide-mouthed vessel. Ducks like to wash their heads and eyes at all times.

A good well-balanced mash can be prepared as follows :

	Parts by weight
Ground yellow maize	25
Wheat bran or rice bran	20
Ground oats or barley	10
Groundnut cake	30
Fish meal	5
Ground limestone	5
Salt	½
Dried greens	5

TABLE DUCKLINGS

If you want to produce table ducklings, begin on a small scale first. Rear ducklings of breeds which are good for meat or crosses of such breeds. In 12 weeks, they will be ready for sale. Remember that for every one pound of body weight, the ducklings need four pounds of food. At 12 weeks, a duckling will weigh four to five pounds.

You should get at least 200 eggs from each duck a year

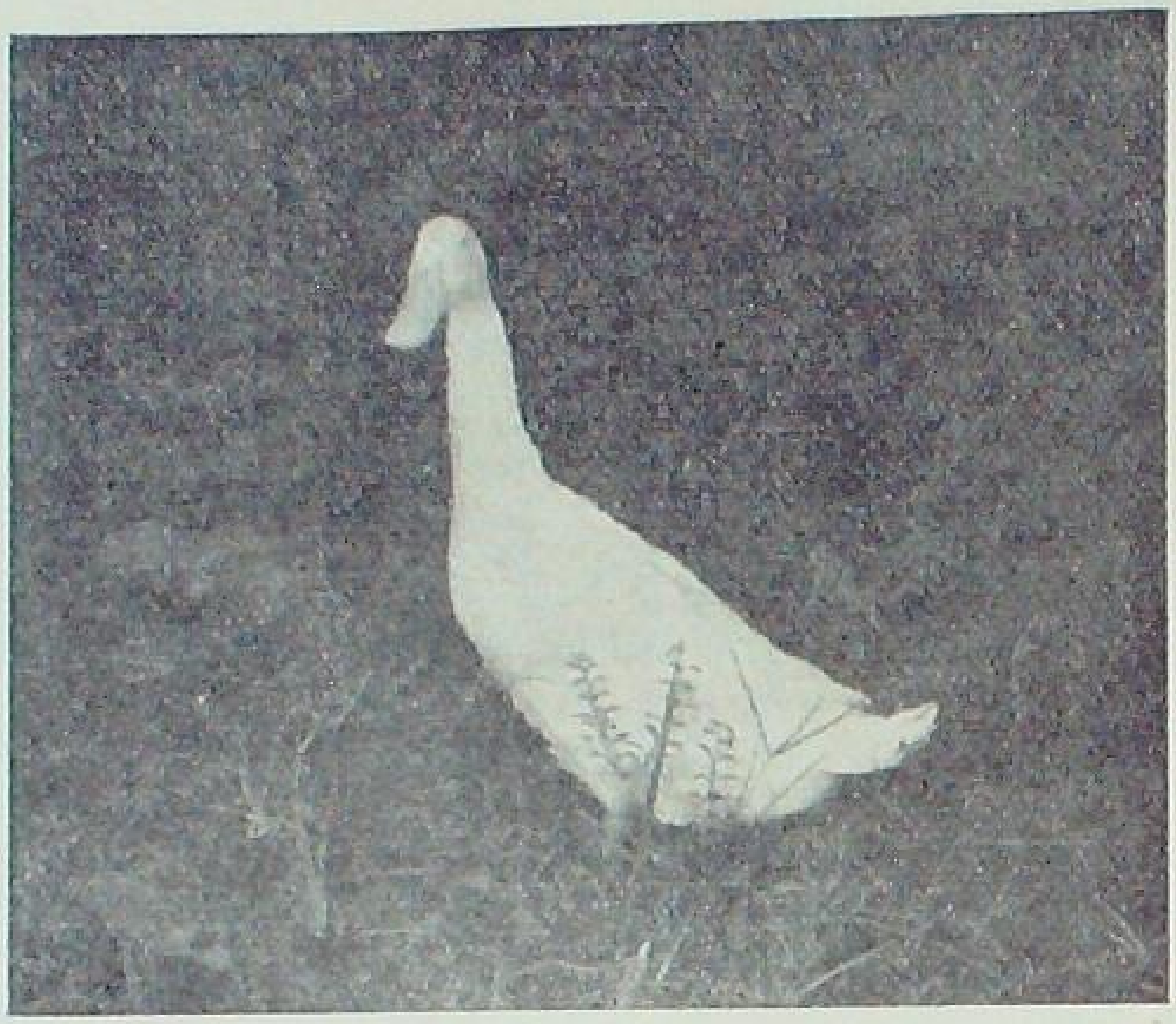
If you want to maintain a meat breed, select the *Aylesbury*. It has white flesh. If you want to try crossing, use *Pekin* and *Aylesbury* for the purpose.

You can also fatten unwanted birds for the table. Feed them with fattening food like wheat bran or rice bran, maize meal, boiled rice in equal parts with offal and vegetables added. Feed them thrice a day inside the cage.

DISEASES

If you manage the ducks properly, you will not have the disease problem. But once ducks are infected and become sick, they cannot be cured. Hence, you will have to take steps to prevent these diseases.

Ducks and ducklings can get many types of diseases. It is a good policy to consult a Veterinary Doctor as soon as you suspect any disease attack.

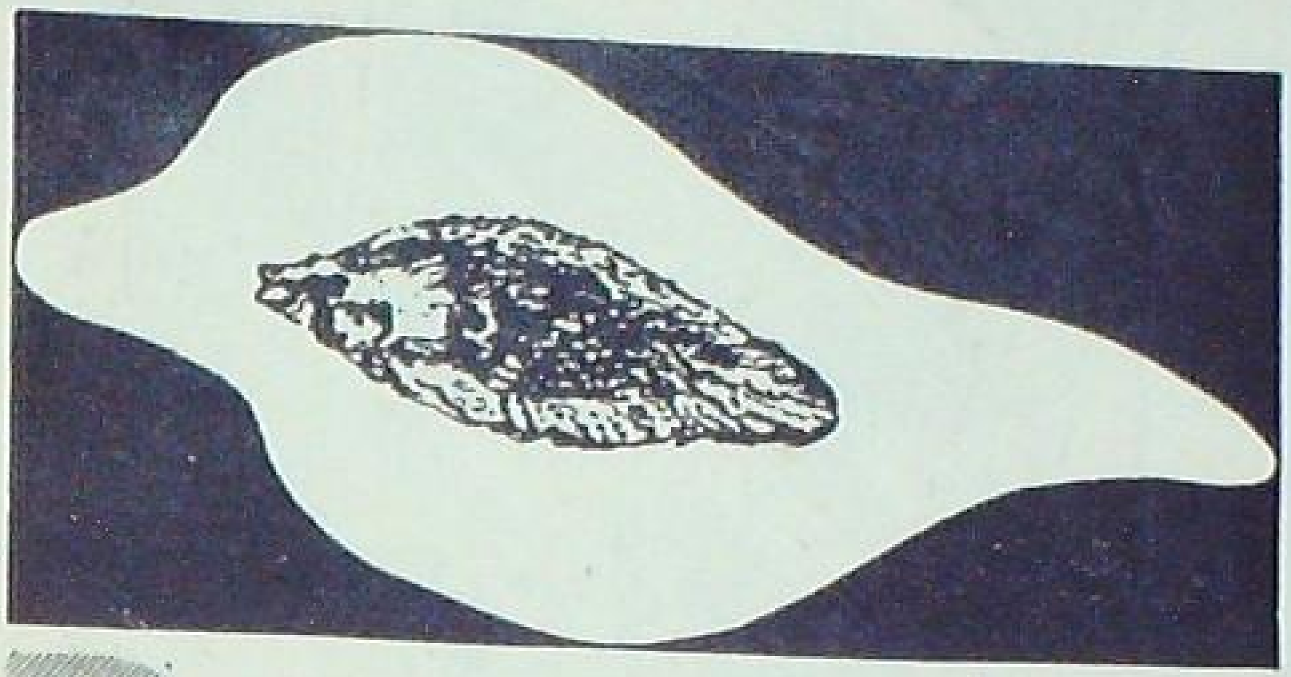


Fatten the unwanted birds for table purposes

BUYING STOCKS

The *Khaki Campbell* breed does well in our country. Many Government Poultry Farms sell good birds of this breed for the foundation stock. You can buy your birds from :

1. The Director, Indian Veterinary Research Institute, Izatnagar (Bareilly), Uttar Pradesh.
2. The Milk Commissioner to the Government of West Bengal, Writers' Building, Calcutta.
3. The Superintendent, Poultry Multiplication Centre, Midnapore, West Bengal.
4. The Superintendent, Government Poultry Farm, Tollyganj, Calcutta.
5. The Poultry Development Officer, Government of Uttar Pradesh, Badshah Bagh, Lucknow.



THE Damaging LITTLE FLUKE

By O.P. Malhotra

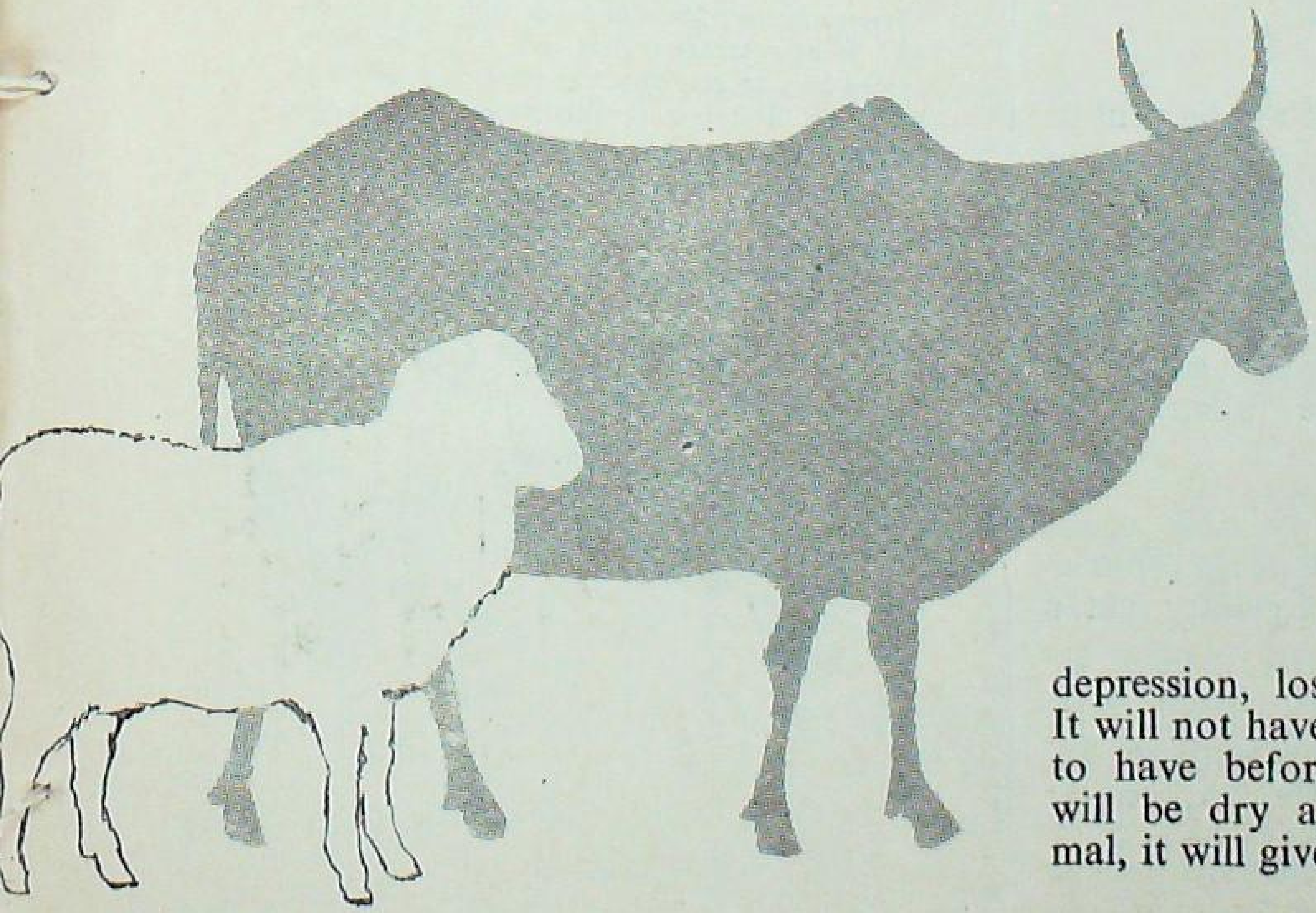
FLUKES are just one type of worms (others being the tapeworms and round-worms) that can do a lot of damage to your cattle and sheep.

They damage the liver (for which reason they are called liver flukes) and the bile duct of the animal, and may even choke up the digestive canal too.

Liver flukes, which are flat like a leaf, are an inch long and half inch wide when grown up. Calves are their easiest victims. Flukes produce eggs in the body of the animals which fall out with the dung, and develop into young flukes.

The young flukes, however, don't go back to your cattle. They prefer snails. In the body of the snails they grow up, then leave them to get into water, swim about, or get out on to blades of grasses, waiting for your cattle to eat such grasses or drink the water, so that they may get into their bodies.

Six weeks after your animal has taken in a fluke, it starts showing symptoms: dullness,



depression, loss of appetite, and weakness. It will not have the liking for food as it used to have before. The skin, you will notice, will be dry and hard. If it is a milch animal, it will give you less milk.

Dullness and weakness soon increase, and the animal goes down in condition so much that it is not able to do anything better than lie down. In bad cases, it gets diarrohea, and death comes soon.

Another common symptom you will notice is the painless swelling it develops below the jaw and on the eye-lids. Press it, and it forms a pit where pressed.

You have to do two things when you see the symptoms. First, keep the animal away from others. Second, get help from the Veterinary Doctor. The animal has to be given drugs which you should not handle without instructions from the Veterinary Doctor.

Then you will have to see that you get rid of the flukes from your pasture and pond, so that more animals may not get them.

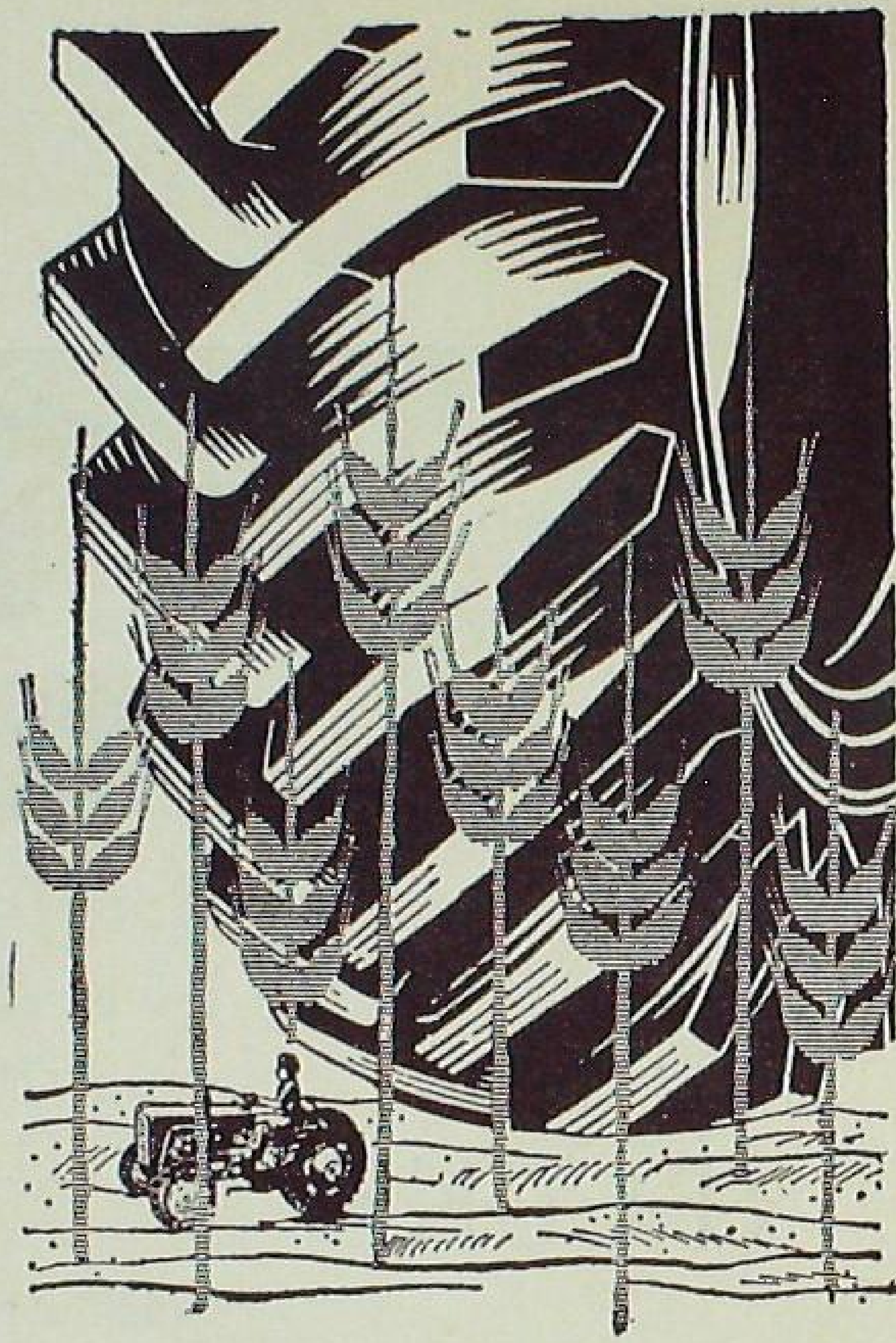
Prevent animals from grazing in marshy or low-lying lands or by the side of ponds, in the meantime.

Fence off marshy places. Plan a good drainage for your pasture. Clear ditches of mud and grasses and plants.

Poison the snails which are helpful to flukes. This you can do by using copper sulphate (blue vitriol or *neela thota*). Make a mixture of one part of this and six parts of sand, and broadcast the same over the pasture at 20 to 30 pounds an acre just before the rains. Don't let cattle graze on such lands till heavy rains have fallen.

For ponds, decide roughly how much water there is in them. Use *neela thota* so that each 2,00,000 gallons of water get a pound of it.

Treat the pond before the rains set in. To be sure you kill all flukes, treat the water again after two or three months.

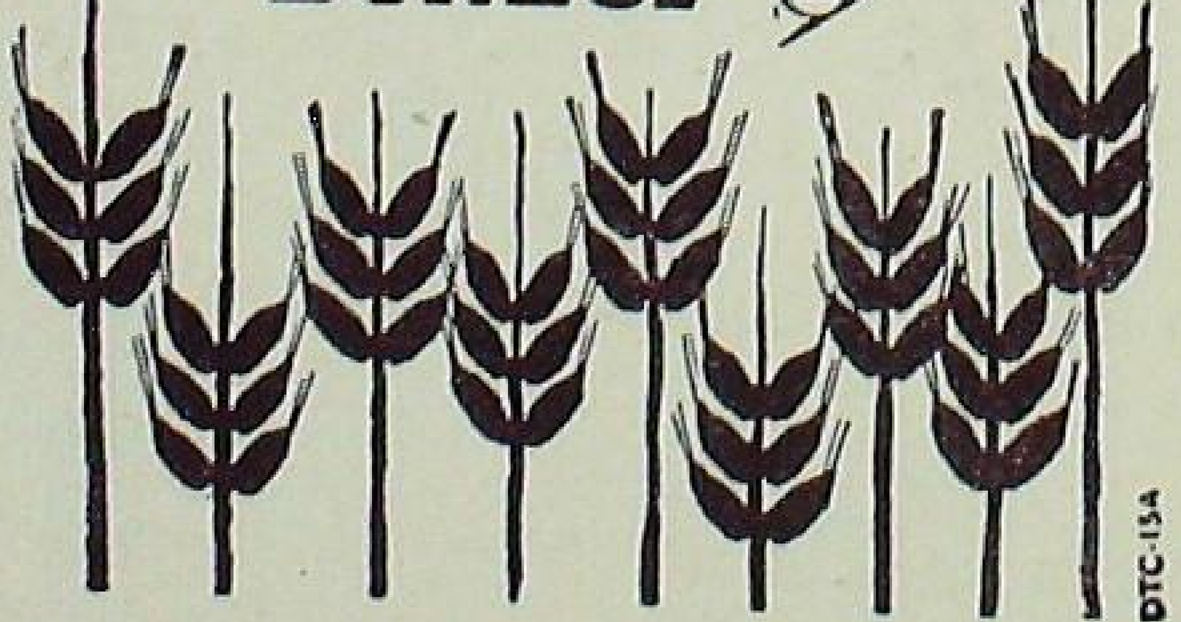


This tyre lowers your farming costs

Tractor farming becomes easier with the Dunlop RT 33 open centre tractor tyre which has more tread bars to give the maximum grip on hard dry soils. This tyre reduces power loss on the tractor and enables a greater acreage to be ploughed per day.

More tractors in India are fitted with the Dunlop RT 33 Tyre than any other make

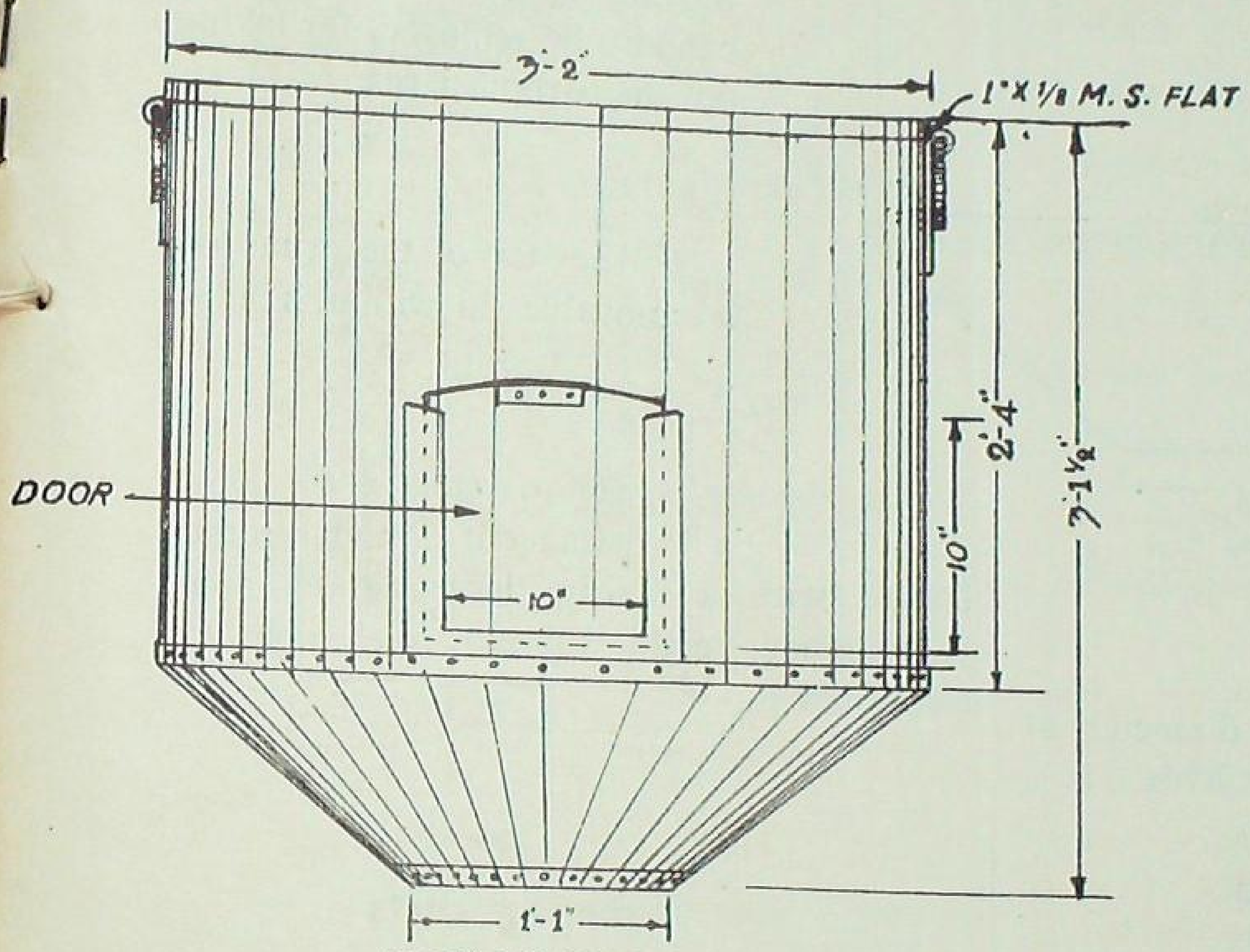
DUNLOP



DTC-15A

The Parboiler at Kallupatti

By K. Sanjeeva Shetty



FRONT ELEVATION

In the home, they parboil rice in earthen or metal pots. The process is slow, and not economical. The mills follow a process that is too long which you cannot copy in village homes. One solution to this problem is the parboiler.

With the parboiler, you can turn out more paddy in comparatively a short time.

The Kallupatti parboiler has a cylindrical parboilering drum, with a perforated sieve at its bottom, and a door at its side.

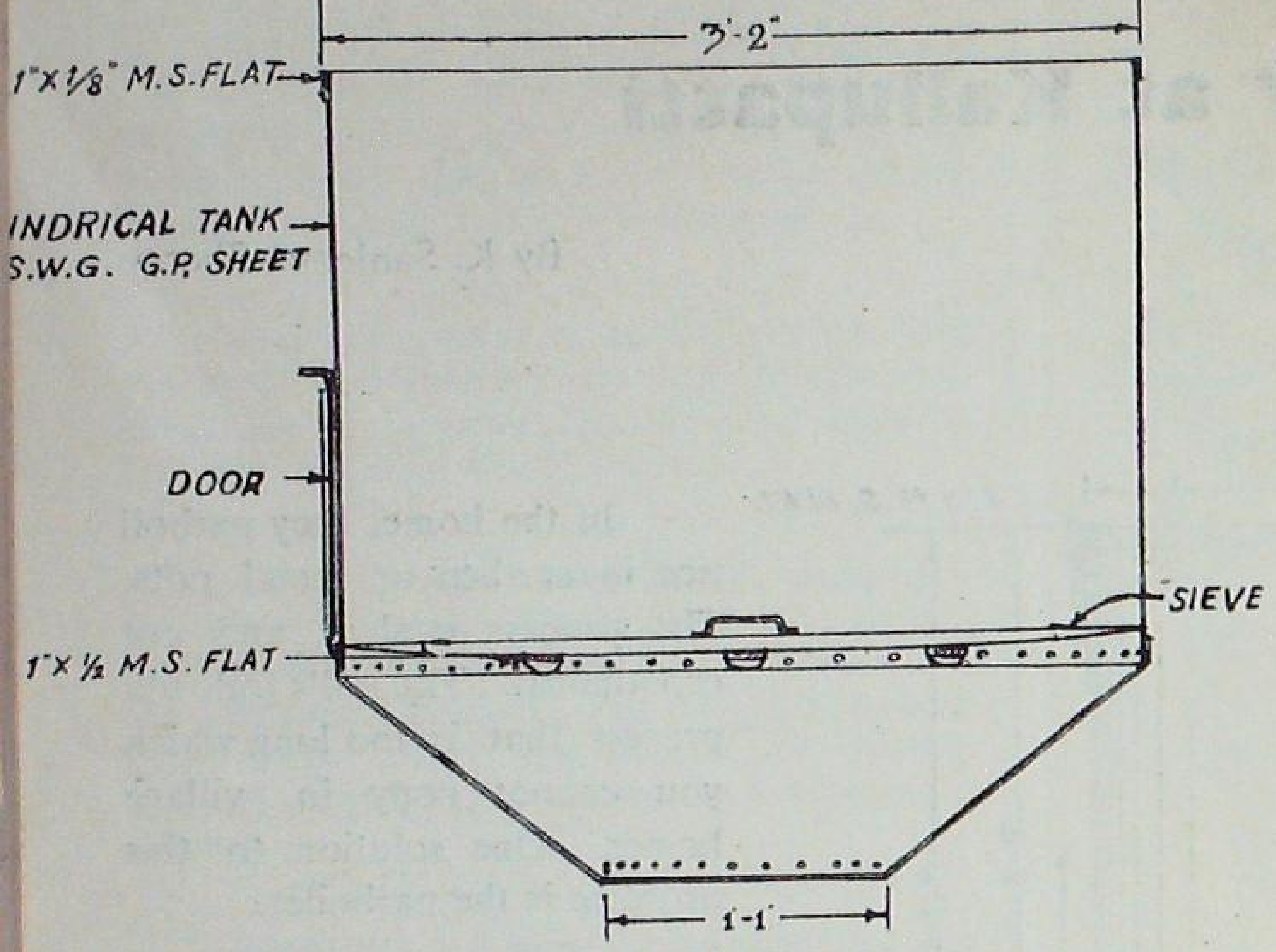
The bottom of the boiler has a shape of an inverted frustum of a cone. This holds the water for the boiler.

AT the Rural Extension Training Centre at Kallupatti (Madras State), we have a parboiler that we have been working for the last few years with good results.

In many houses in our rural areas, they prepare parboiled rice (which is richer in food value even when highly polished than raw rice). So also do many rice mills.

This is how the boiler is made.

The cylindrical tank, 3 feet 2 inches in diameter, is fabricated by welding together three plates of 3 feet 4 inches (or 3 feet 4½ inches) by 2·feet 4 inches by 18 gauge B. P. sheets, with an allowance of ½ an inch for rivetting. Two handles are fixed at the open end. An M.S. flat of 1 inch by 1/8 inch is welded all round the open end.



SECTION "AA"

The cone is made of 18 gauge B. P. sheets, and welded to the tank.

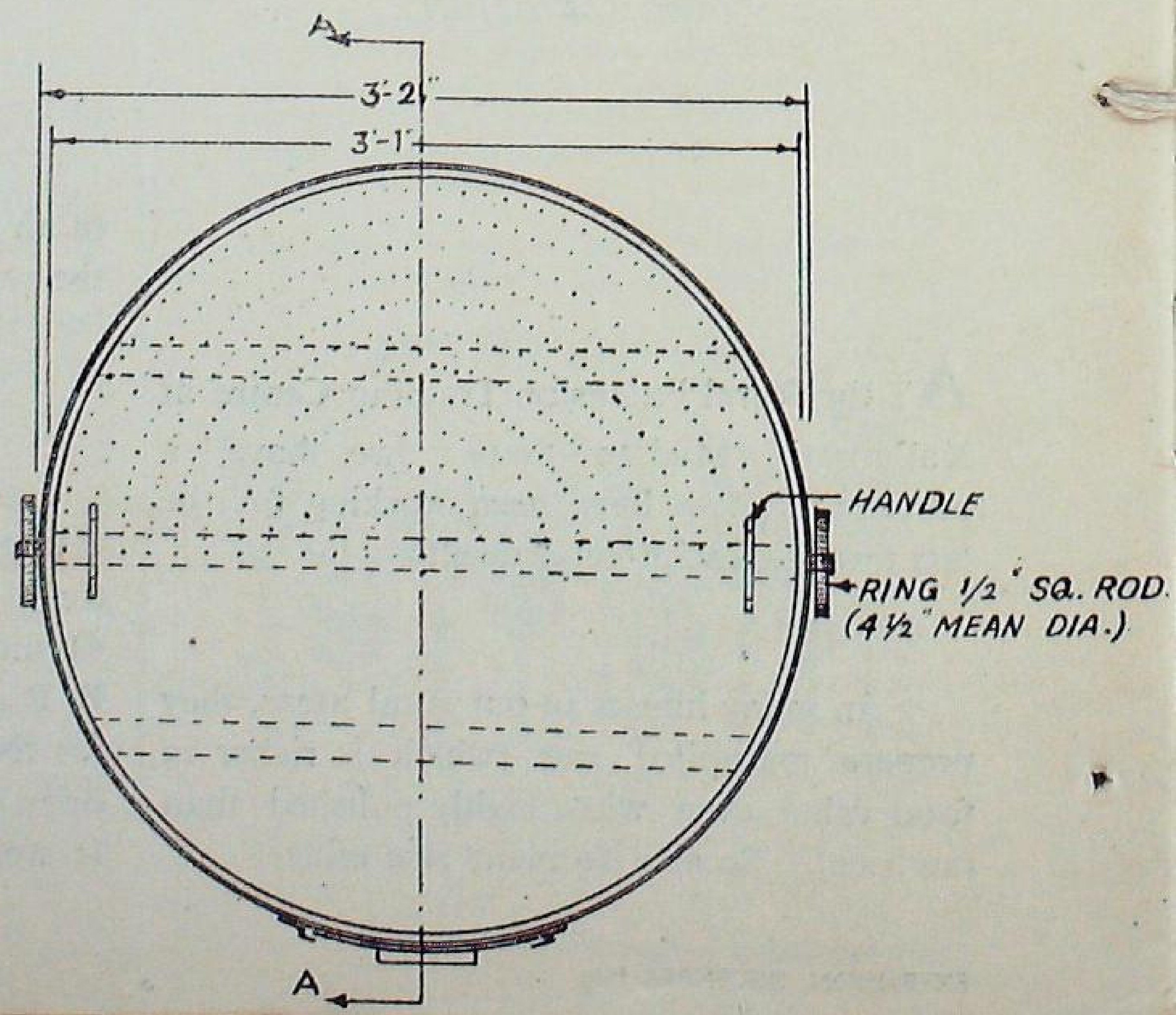
. The door has a shutter moving up and down, which can also be removed for taking out the parboiled rice.

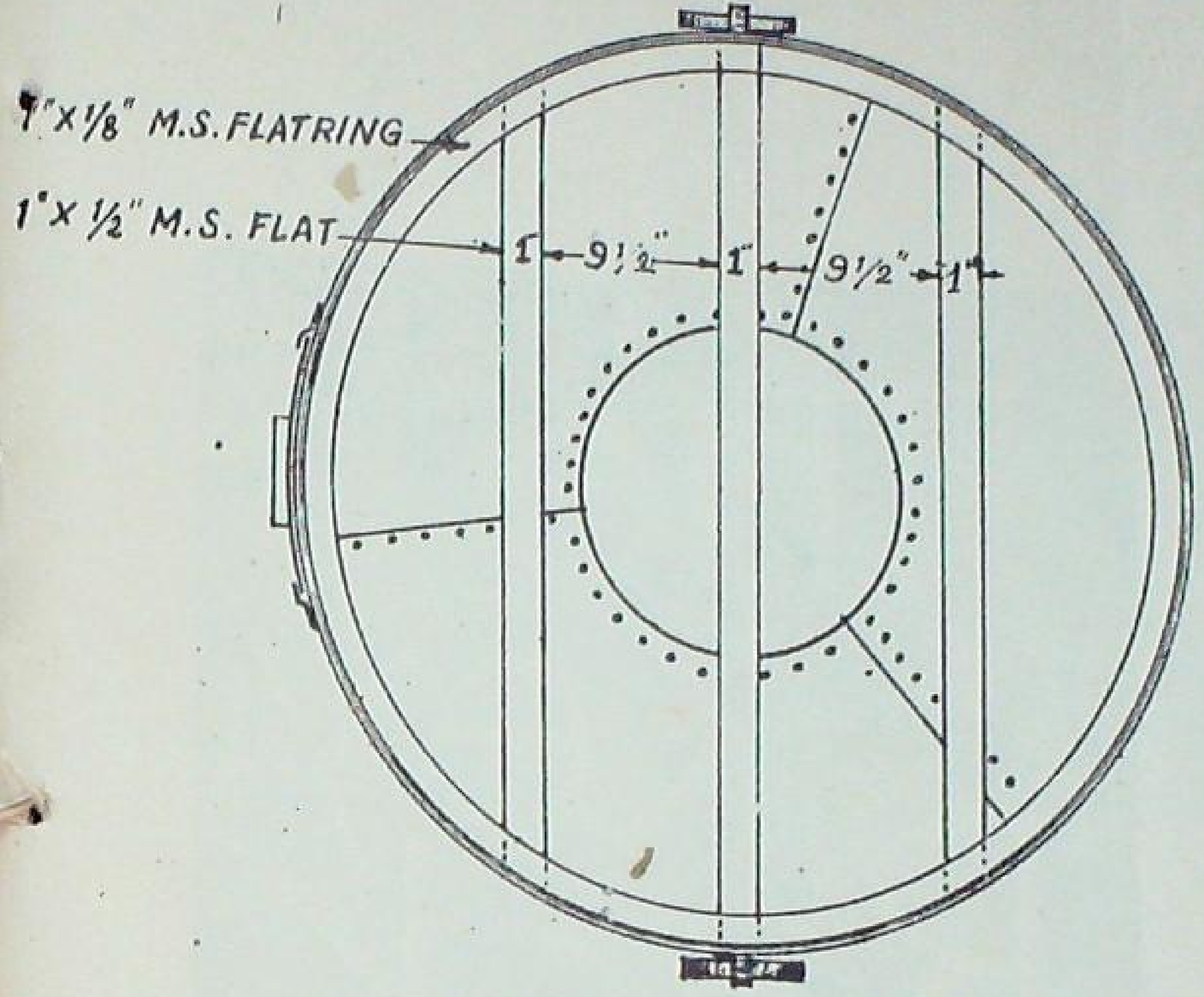
The top of the drum has a removable lid with a handle.

The parboiler is set up on a permanent underground hearth with a fairly large grate area. A chimney, eight to ten feet high, is also fitted in.

The perforated sieve has a diameter of 3 feet 1 inch, is and slightly convex. It is made of 18 gauge G. P. sheets, and has holes small enough not to let the paddy pass through. This sieve rests on a ring made from an 1½ inch by 1/8 inch M.S. flat. Its outside diameter is a little less than the inside diameter of the tank, so that it can move freely up and down inside the drum.

The ring is supported on three cross bars 1 inch by an ½ inch M. S. flat, fixed across the drum, just near the joint formed by the drum and the inverted cone.





PLAN WITHOUT SIEVE

The cost of making such a parboiler is Rs. 140 (as made at the Gandhiniketan Cooperative Society at Kallupatti).

The conical shape of the bottom exposes a greater surface area of the drum to the heat in the oven. The loss of heat is thereby brought down to the minimum.

The tank (drum) can hold 120 Madras measures or 250 pounds (in weight) of paddy. It takes 1½ hours for the first charge to be complete, consuming a fuel charge of 35 to 40 pounds. Both the time and fuel needed for the following charges will be lesser.

FILMS ON LOAN

The Farm Information Unit of the Directorate of Extension has a library of films and filmstrips on agriculture and Home Science subjects. Membership is free. These films are given on loan, free of charge, to members of the library. For details regarding membership and films and filmstrips available, please write to the Librarian, Farm Information Unit, Directorate of Extension, Krishi Bhavan, New Delhi-2.

We welcome your

Questions and Suggestions

Address them to

EDITOR

'EXTENSION'

Directorate of Extension
Ministry of Food and Agriculture
Krishi Bhavan
NEW DELHI

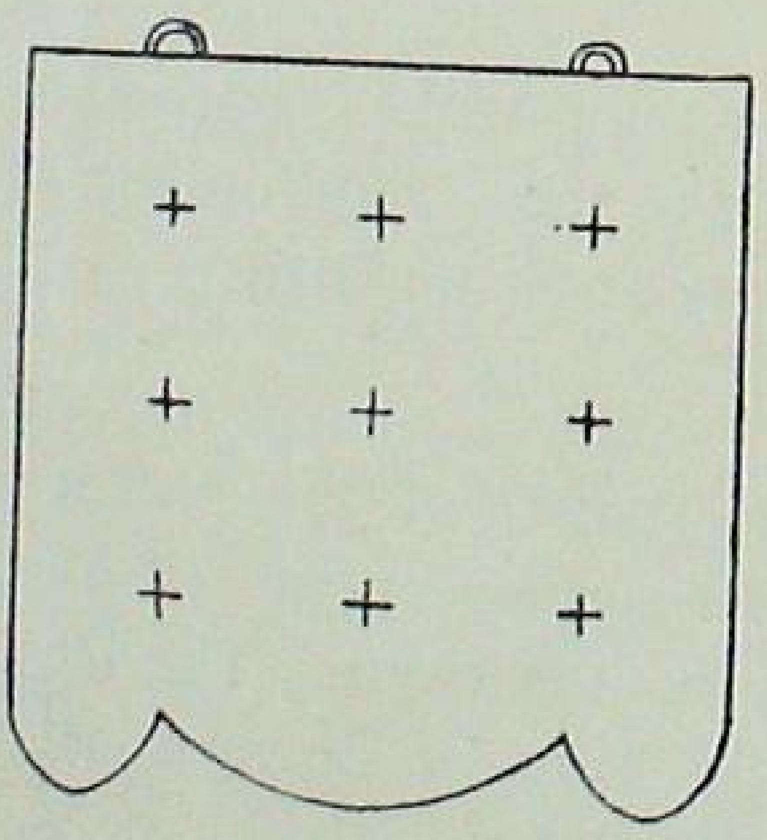
The Key Rack

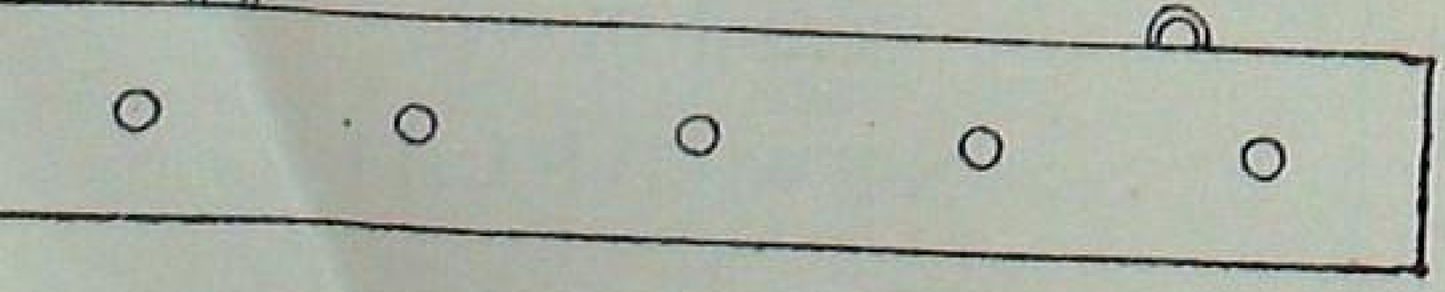
By Kamlesh Puri

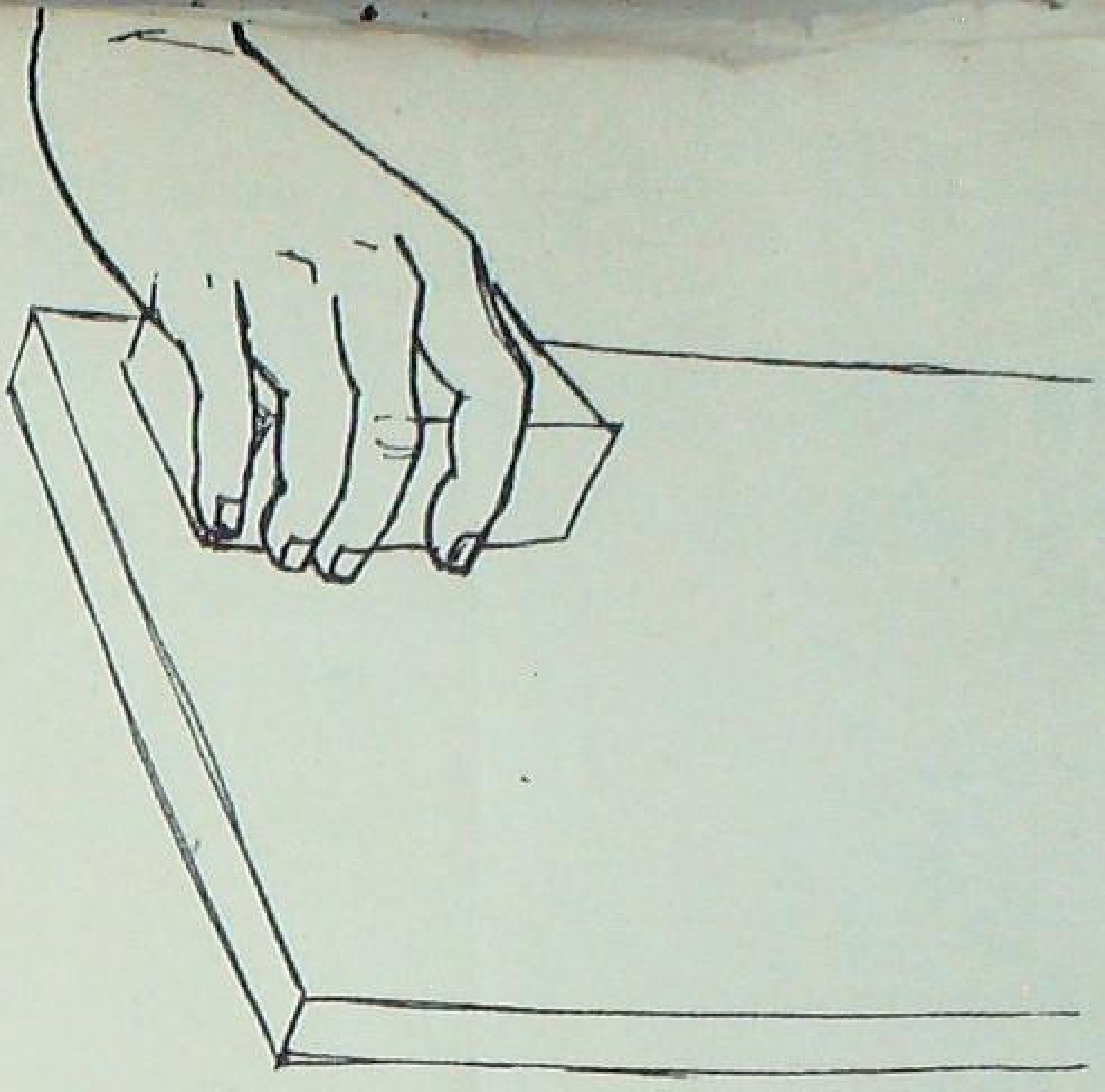
KEYS have a bad habit of getting lost. And you waste many hours searching for them.

The best place for the key is the key rack, where it can stay and be available to you whenever you want it.

You can make this rack yourself. You have more than one design to choose from.





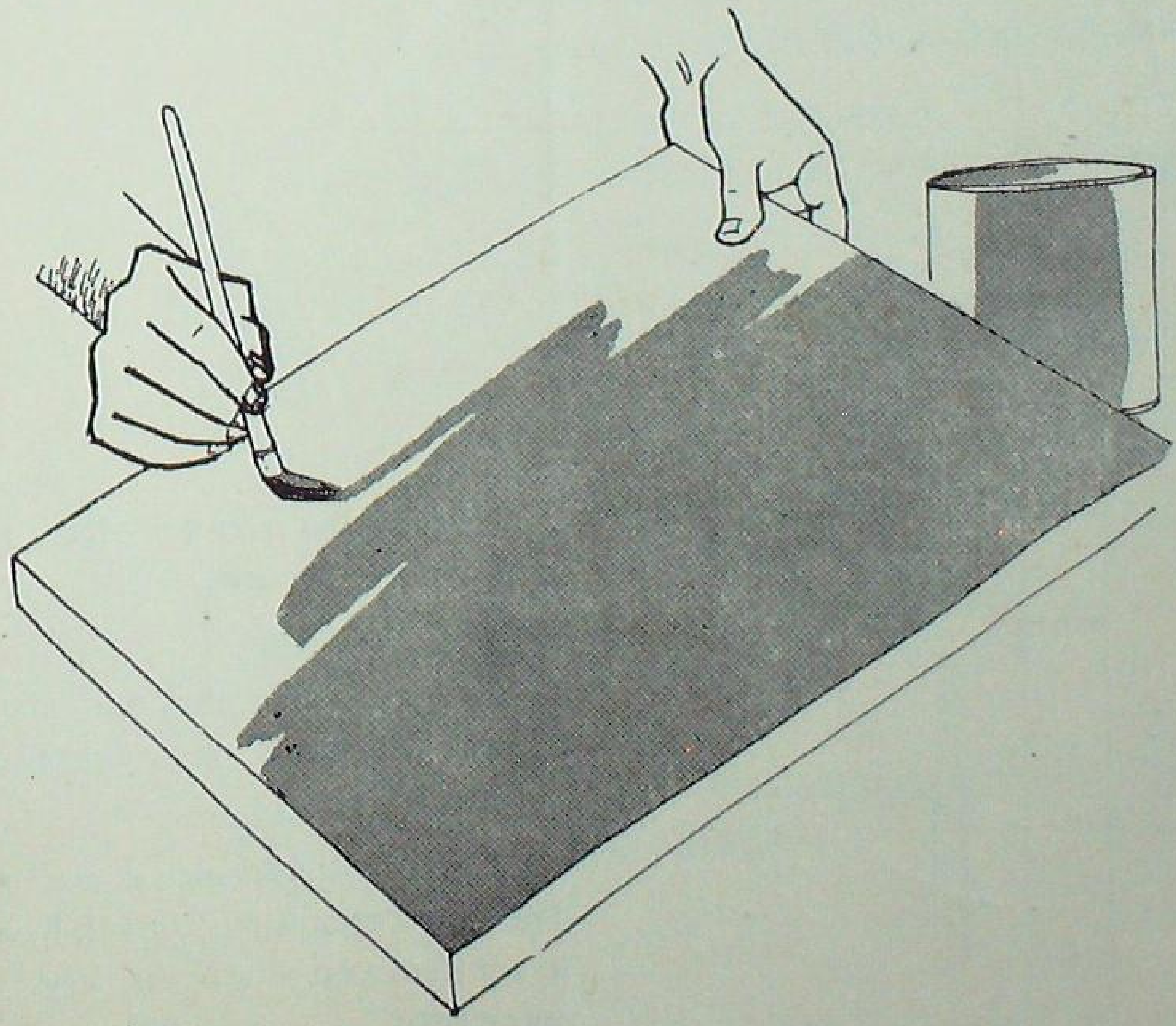


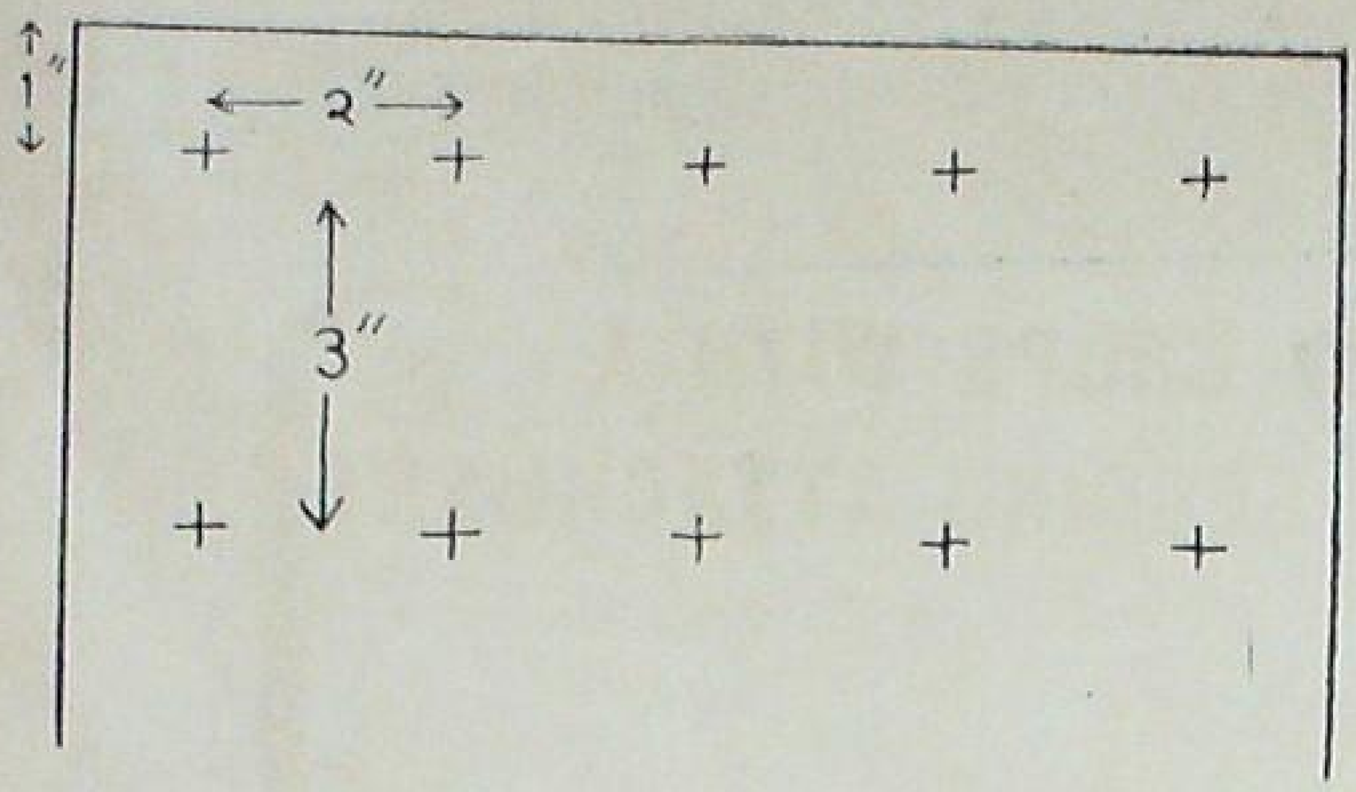
You will need plywood or gumwood (half inch thick), screws or hangers or hooks, sand-paper and some wood stain.

Choose the design, and choose the wood of the size and shape you want, or saw it to the desired shape.

Sand-paper the wood smooth.

Finish with a wood stain. For doing this, mix equal parts of linseed oil and turpentine oil. Apply this as an under coat. It will help in the colour of stain being absorbed uniformly by the whole surface.

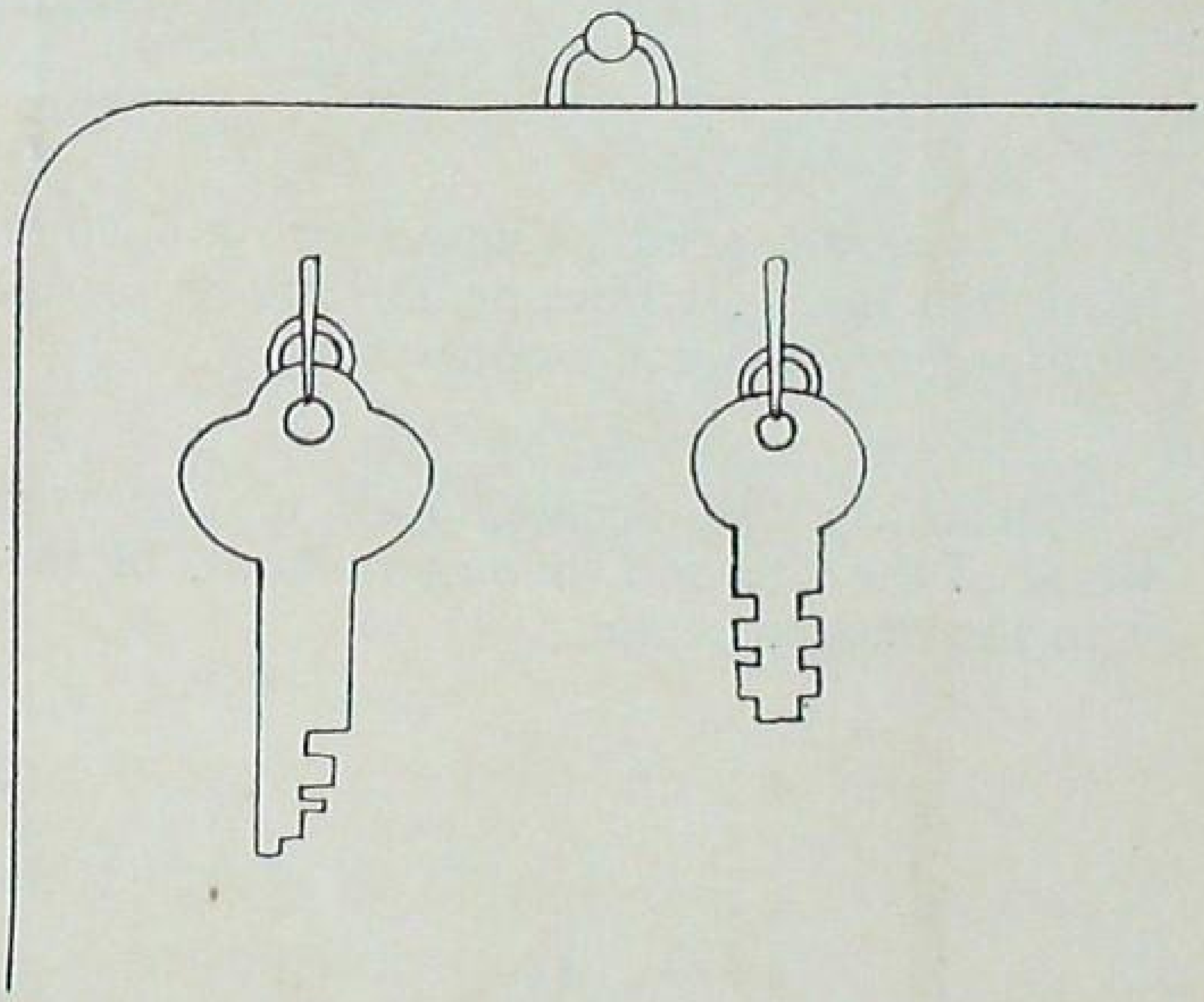


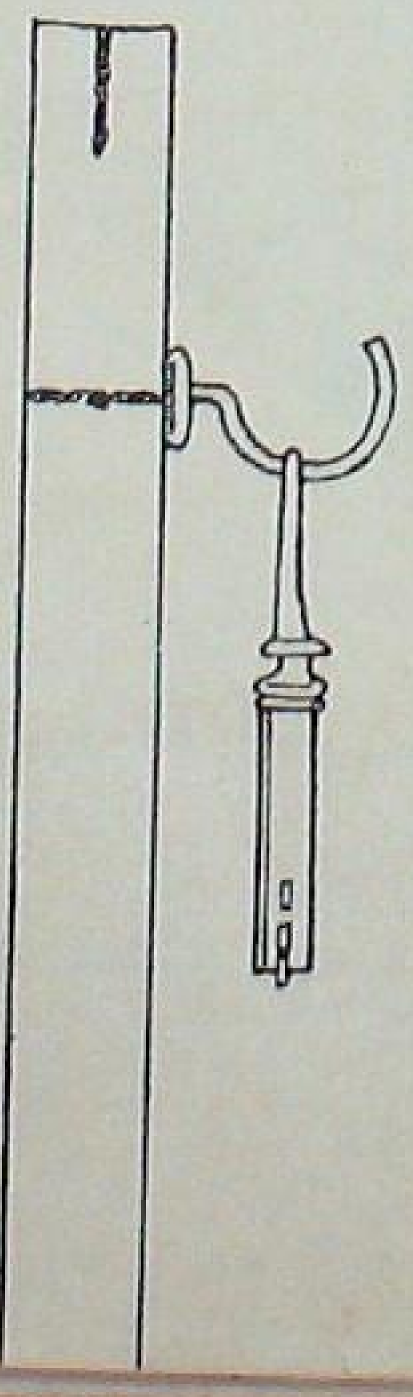


Measure the distances from the corners of the rack and mark for placing the screws or hooks.

Measure again the distances for the placement of hooks or hangers and screw them in place.

Better buy a ready-made stain if available in your town or village. If you cannot, prepare your own stain by mixing tube-colours with some linseed oil. Brush this stain freely on the wood surface. Let it dry, brush again, and let it dry. When the stain has dried completely, apply a protective coat of ordinary varnish.



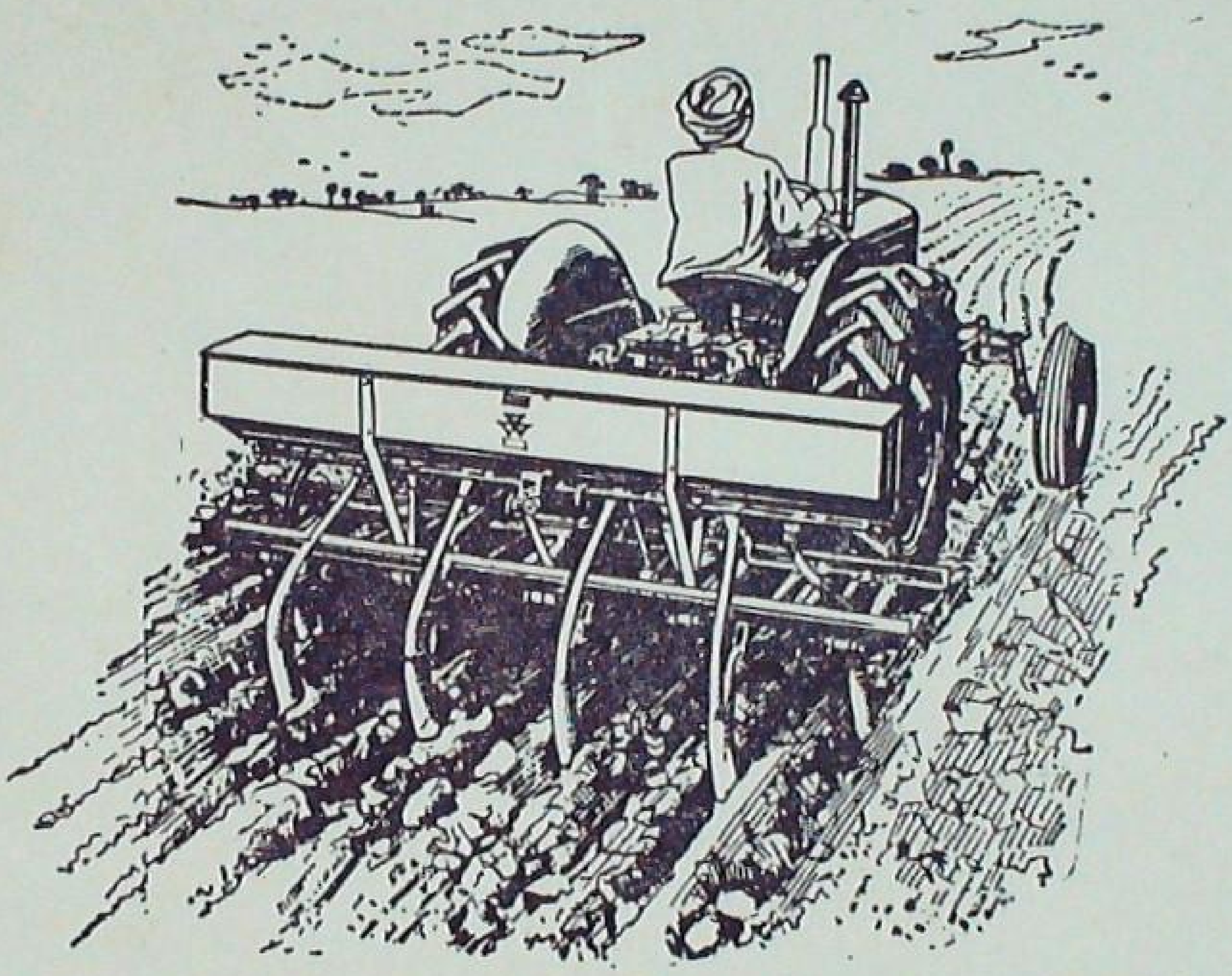


Screw the screws in place. The key rack is now ready for use.

A rack like this will also be a good present which any one would like to have.

You will find such a rack quite handy. The only precaution you will have to take is to see that you return the keys to the rack every time !

INCREASE YOUR RABI CROPS WITH A MASSEY-FERGUSON SEEDING ATTACHMENT



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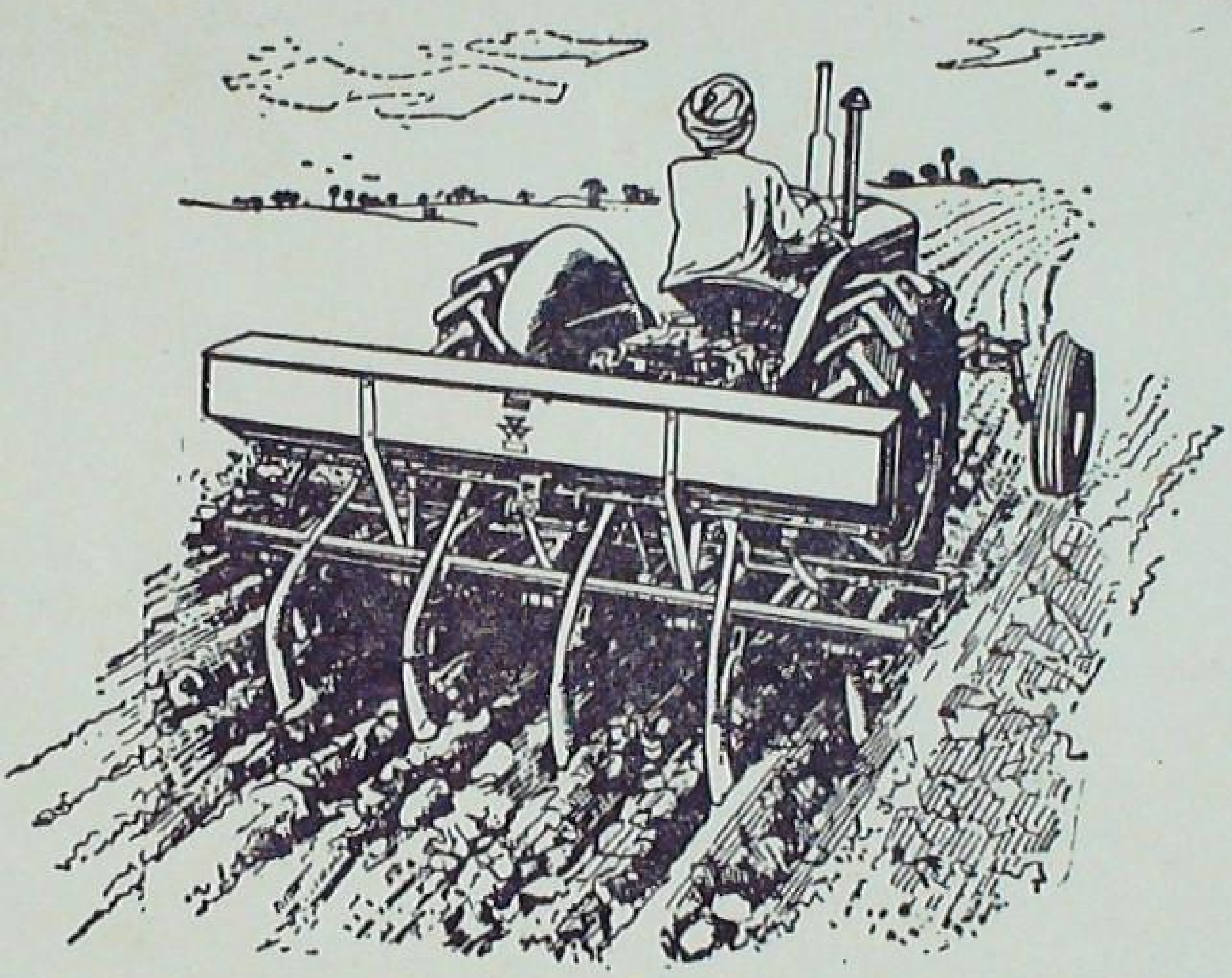

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Regd. No. D-1180

Destroy the enemies of potato

Potato is a valuable crop. However, it has hordes of enemies. **Cutworm, Whitegrub**, Jassids and **Early and Late Blights are some of** them.

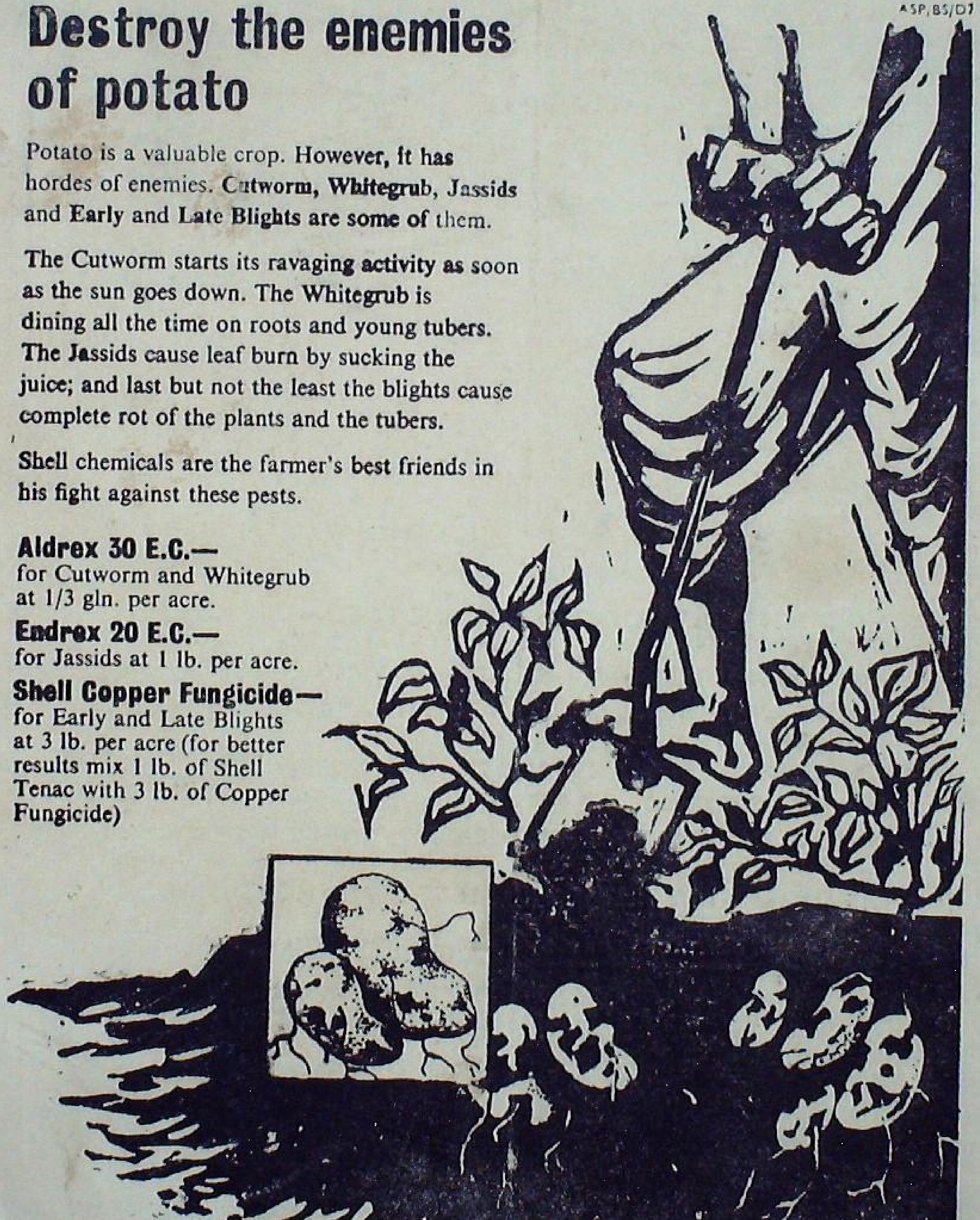
The Cutworm starts its ravaging **activity as** soon as the sun goes down. The **Whitegrub** is dining all the time on roots and young tubers. The Jassids cause leaf burn by sucking the juice; and last but not the least the blights cause complete rot of the plants and the tubers.

Shell chemicals are the farmer's best friends in his fight against these pests.

Aldrex 30 E.C.—
for Cutworm and Whitegrub at 1/3 gln. per acre.

Endrex 20 E.C.—
for Jassids at 1 lb. per acre.

Shell Copper Fungicide—
for Early and Late Blights at 3 lb. per acre (for better results mix 1 lb. of Shell Tenac with 3 lb. of Copper Fungicide)



FOR AGRICULTURAL CHEMICALS—**BURMAH-SHELL**

Regd. No. D-1180

ASP/BS/D7

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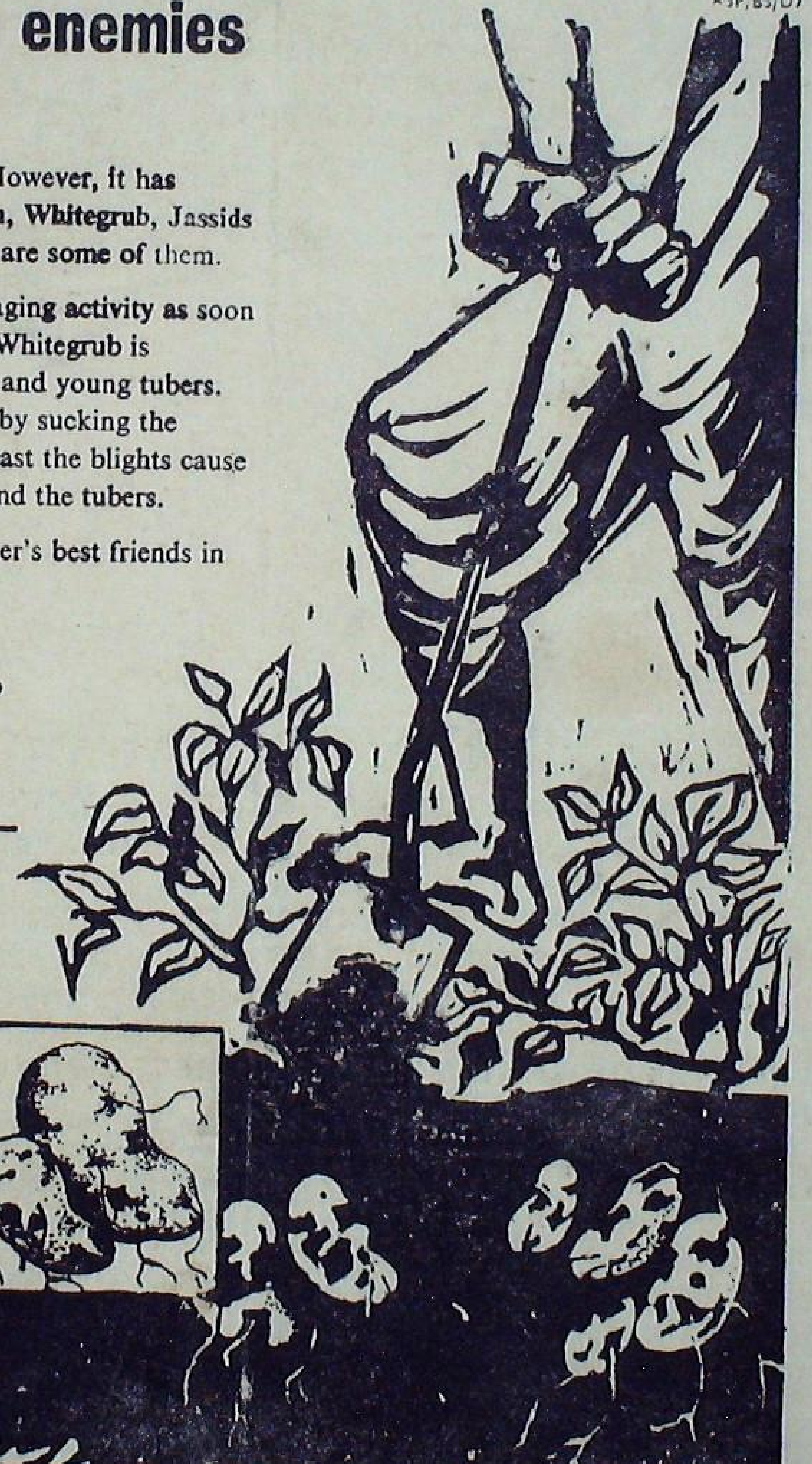

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